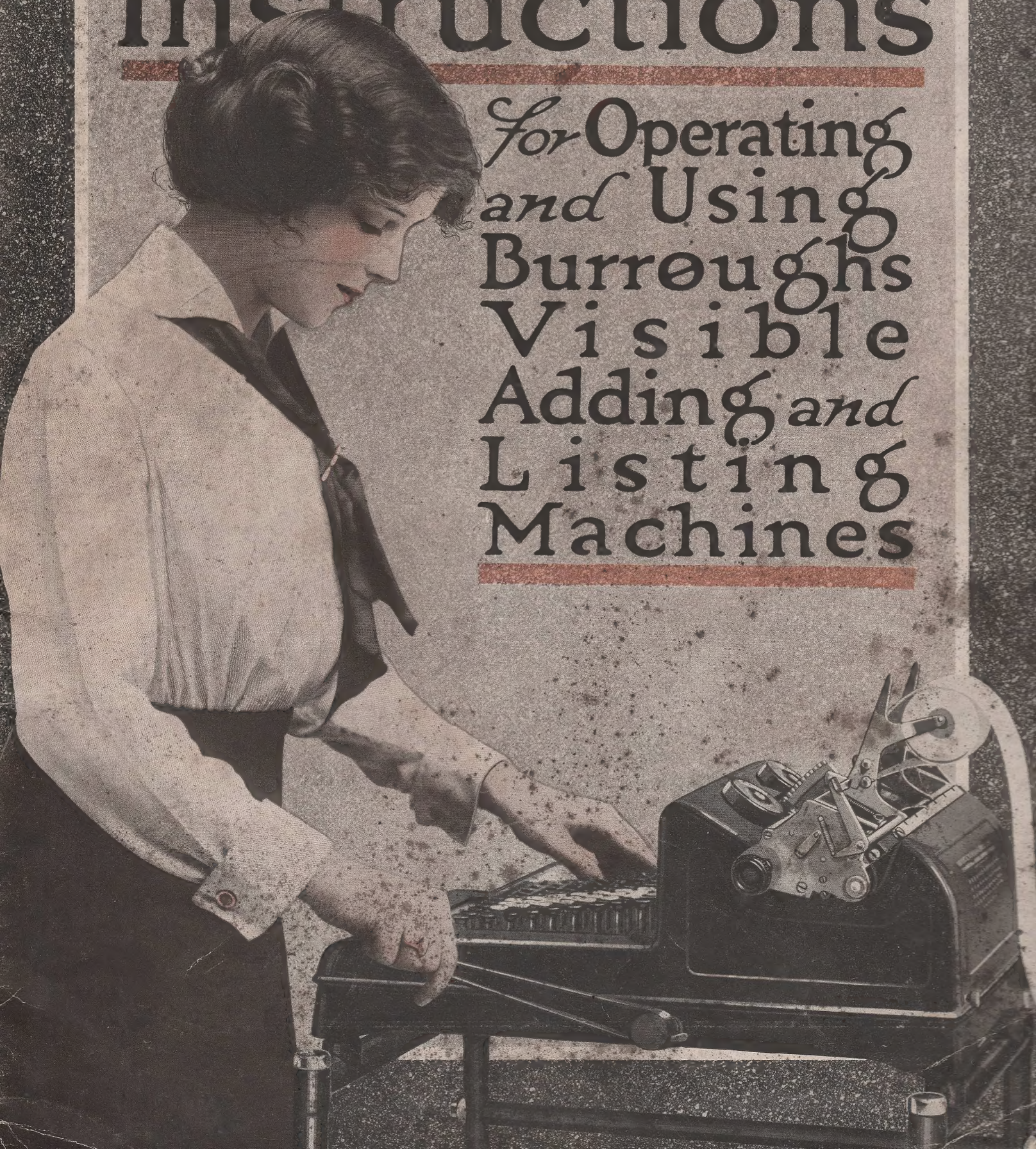


Instructions

*For Operating
and Using
Burroughs
Visible
Adding and
Listing
Machines*



What Burroughs Figuring and Listing Machines Do

EVERY Burroughs Figuring and Listing Machine has two very definite and distinct functions, both performed simultaneously by the same mechanism. It is these two functions that form the foundation upon which all Burroughs work, however complex, is built.

1. It automatically and without possibility of error computes amounts that have been placed on the keyboard.
2. It neatly and legibly prints each item computed and is ready, at any time, by the mere pulling of a handle, to produce a printed result of the machine's infallibly correct automatic calculation.

While the original Burroughs paved the way to great economy in handling figures, more recently designed Burroughs models have opened up much wider opportunities in machine figure work by making mechanical bookkeeping practical.

In order to secure the greatest possible service from the use of a Burroughs it is necessary to know how best to adapt the machine to the different kinds of figure work entering into different lines of business. It is the purpose of this book to serve the interests of Burroughs Users by placing this information before them in an understandable way.

INSTRUCTIONS *for* OPERATING *and* USING

Burroughs Adding and Listing Machines *Class Three Hundred*

The information contained in this book is not all necessary for the mere operation of a Burroughs Figuring and Listing Machine. A portion of the book is devoted to showing a few of the many varied ways in which a Burroughs may be applied in different lines of business.

TWELFTH EDITION

Burroughs Adding Machine Company

1917

Accessible ribbon spools facilitate changing ribbons.

Burroughs bell may be used to count items, fix the top position of different columns of figures and indicate that the bottom of the sheet has been reached.

Non-add key for cutting out addition when item is to be printed but not added. Automatically marks such items with symbol \neq .

Repeat key for repeating any item as many times as desired. Used for division, multiplication, etc.

Total key. Automatically marks all clearing totals with Burroughs star \star even on carbons. Total key is also general correction key for clearing keyboard.

Sub-total key. Automatically marks sub-total with symbol S even on carbons.

Non-print key. Cuts out printing when item is to be added but not printed. Automatically stops paper feed.

Separate column correction keys for correcting a single figure in any column without disturbing balance of item. Corrections can be made before item is printed.

Roll paper always on machine even when printing on other forms.

All items are visible as soon as printed. Printing point only three inches back of keyboard.

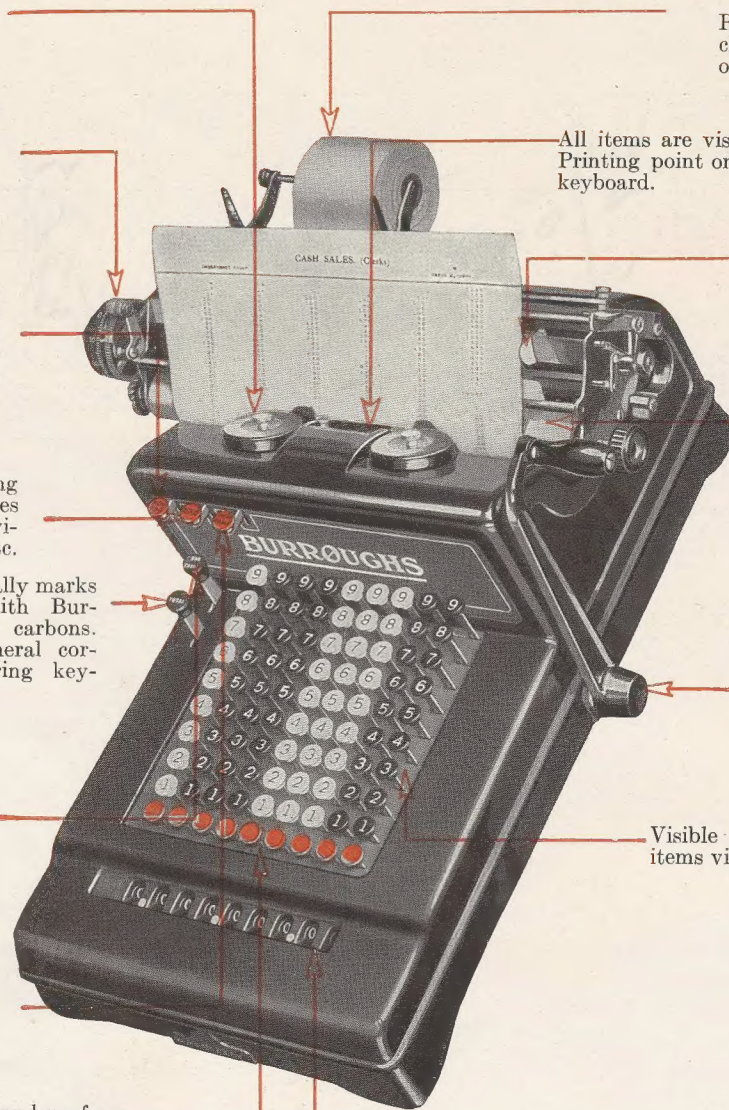
Adjustable paper guides facilitate handling of sheets of paper.

Paper carriage for handling both wide sheets and roll paper. Can be used for cross-tabulating work.

Light easy handle pull. Removable handle enables operator to protect work left in machine.

Visible writing keyboard. All items visible before printing.

Adding dials directly under the eye, yet placed where figures on dials can not be confused with the items printed.



Burroughs Low Keyboard Visible Adding and Listing Machine

Showing Style No. 324

THE low keyboard makes this machine convenient for use on a desk, a very important feature where space is valuable.

These machines have *triple visibility*. (1) All the printing is visible, *all* the time, in easy reading range, the paper carriage being only three inches back of the keyboard; (2) Visible adding dials, directly under the eye; (3) Visibility of each item on the keyboard before it is printed.

This visible line is made in four sizes, with 6, 7, 9, and 10 columns capacity. The 6-column model is equipped to handle narrow paper only, either $2\frac{5}{16}$ inches or $3\frac{1}{2}$ inches wide. The other three models can be had with a $3\frac{1}{2}$, 12 or 20-inch carriage, for handling roll paper or very wide sheets.

The three larger capacity machines are also made if desired, with two-color ribbon, month and date keys, special keys for terms and other features to fit individual businesses.



Figure 1
Specially Constructed Shipping Box

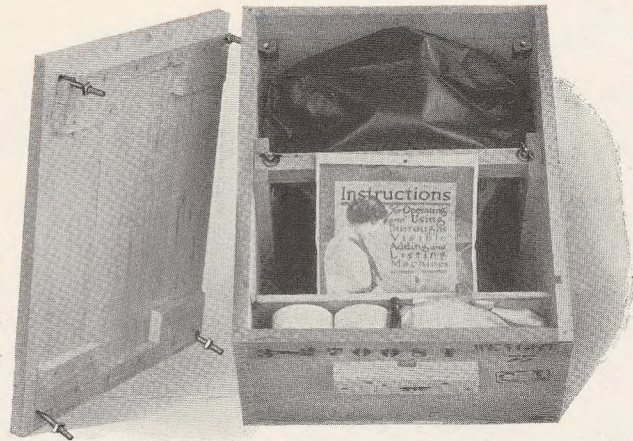


Figure 2
Shipping Box with Cover Removed

How to Unpack and Set Up a Visible Burroughs

EVERY Burroughs is packed in a specially constructed box like the one shown above. This is done so the machine may be unpacked without damaging the box. After the machine has been unpacked the box should be carefully preserved so that, if at any time it is necessary to re-pack and ship the machine, its safe transit will be insured by the use of the same box.

Remove the bolts that hold the top of the box in place. With the top removed, loosen and take off the wing nuts on the two up-right rods. This will permit the hold-down to be removed. The machine may then be lifted out of the box.

To Unpack a Burroughs Electric

ELECTRIC Machines are packed in cases similar in construction to the one in which the hand-operated Burroughs is shipped, except that a false bottom is provided to properly protect the motor during transit. The stand is crated separately and should be unpacked first.

In unpacking the electric machine, proceed exactly as

has been advised in the opposite column, until ready to remove the machine from the box. Grasp the machine and tilt it slightly (see Figure 3) so that the motor will clear the false bottom as the machine is being lifted out of the box. The man should stand so that his right hand comes on the motor switch side of the machine, as is shown in Figure 3. When the machine has been placed on its stand remove the hood and the cords which hold the printing carriage in position. Operate the machine several times with the handle before turning on the electric current.

How to Attach the Handle

THE handle will be found separate from the machine and wrapped in paper. After removing the cover from the machine, attach the handle by merely slipping it on the shaft at the right side of the machine. It will stand in a nearly vertical position. A little nicked clip on the under side of the hub of the handle may be pressed by the forefinger (see Figure 4), which will make the handle go on more easily. To remove the handle, press this clip and pull the handle straight out.

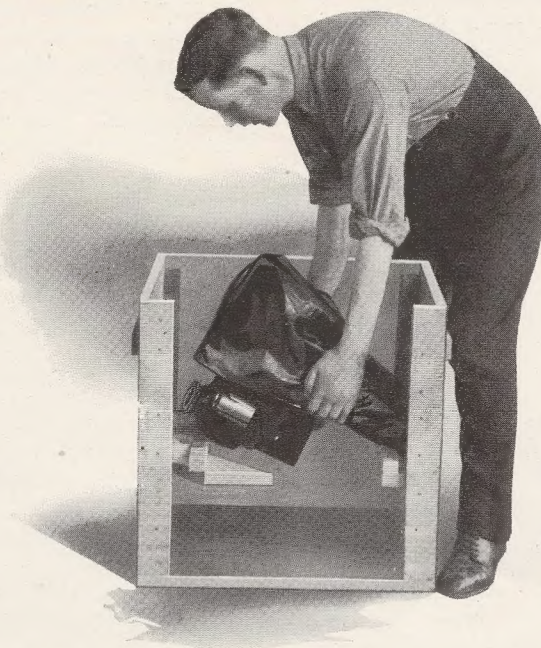


Figure 3
In lifting an electrically operated machine out of its box take care that the motor clears the false bottom

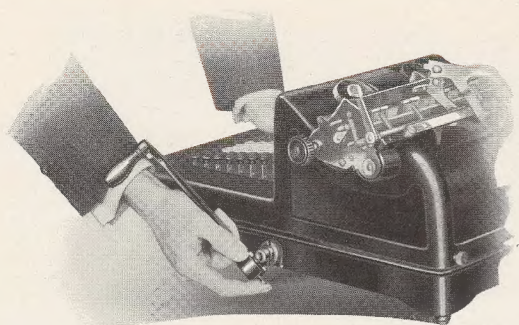


Figure 4—Adjusting the Handle
Press the little nickeled clip to make the handle go on easier

To Insert Roll Paper

THE roll paper supports on 12 and 20-inch carriages will be found in a backward position, but they are made to stand erect by first pulling them up and then pressing them down, which will secure them in the proper position. The nickeled spool goes to the left of the narrow roll paper and is moved farther to the left when using the wide roll paper.

Always attach the roll paper so it will feed from the *bottom* of the roll. Have the adjustable paper guides in line with the sides of the paper roll. Roll paper feeds *under* the paper knife, and sheet paper *over* the rod which carries the knife.

Burroughs Full Visible Keyboard Gives Greatest Speed and Accuracy

WITH the Burroughs full keyboard figures may be written much more quickly than by any other method.

The visibility aids greatly in putting amounts into the machine correctly. An error may be detected as soon as the keys for any amount are depressed. It can be corrected instantly by means of the Column Correction keys or the Total key.

Consecutive numbers can be listed very rapidly by latching the Repeat key down and changing only the last figure after each operation, using the Column Correction keys.

On the Burroughs all ciphers print automatically, which saves a great amount of work. It has been found by analysis of a very large number of items that over 40 per cent of the figures

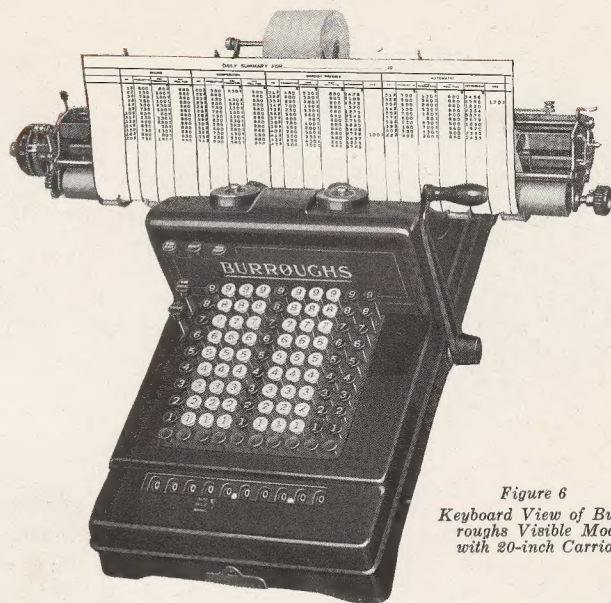


Figure 6
Keyboard View of Burroughs Visible Model with 20-inch Carriage

handled in mercantile houses are ciphers and that more than 60 per cent of the figures handled in banks are ciphers.

Such amounts as 500.00, 1.00, etc., are set up by merely depressing one key. Such amounts as 30.05, 1.50, etc., require the depression of only two keys.

Considerable time in setting up is also gained by depressing two or more keys at once in such items as 5.55, 5.75, 2.34, etc. This simultaneous depression is possible only on a full keyboard.

In multiplications involving decimal fractions an arbitrary decimal point may be taken between any two columns of keys.

To assist the operator further the columns of keys are colored black and white to correspond to the punctuation. This makes it very easy to be sure that an amount is correctly placed on the keyboard.

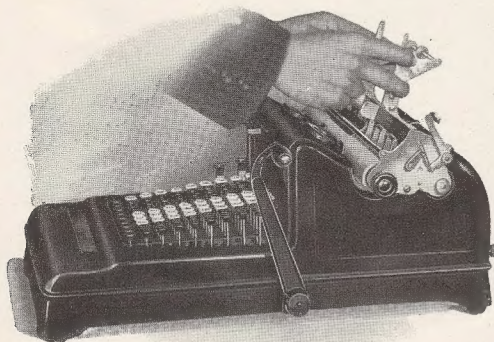


Figure 5—Adjusting Roll Paper Supports
Pull the roll paper supports up and press them down into position

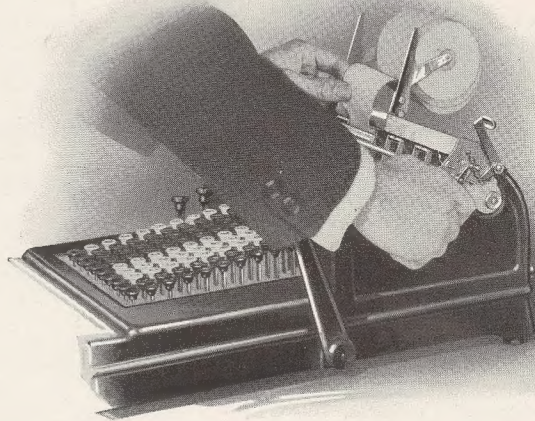


Figure 7—Adjusting the Paper
Roll paper should feed from the bottom of the roll



The Operation of a Visible Burroughs

IN actual practice the Burroughs is an easy and simple machine to operate, although the printed explanations are given here in great detail. This is done so that the instructions may be easily followed.

Taking your knife from your pocket, opening it and sharpening a pencil is a very simple process, but to describe it to a man who had never seen it done would require a half page of printed instructions.

How to Write Items on the Keyboard

THE object of the black and white keys in alternate groups is to punctuate the keyboard and assist the operator to locate proper columns and insert amounts quickly and accurately. Ordinarily the punctuation is for dollars and cents, but it may be had in any other way. The first column of keys on the right is units of cents; the second column, toward the left, tens of cents; the third column, units of dollars; the fourth column, tens of dollars, etc. There are no keys for ciphers; these are printed automatically by the machine when needed.

From this explanation it is evident that items are written on the full keyboard Burroughs in exactly the same way they would be set down on a sheet of paper—a column for units of cents, a column for tens of cents, a column for dollars, etc.

First Prove the Machine Clear

BEFORE beginning to list items the operator should be sure the machine is clear or, in other words, set to zero. To make sure of this depress the "Total" key, hold it down and pull the handle. If there has been a previous total left in the machine this total will be printed on the paper together with a star (*) to distinguish it from an ordinary item.

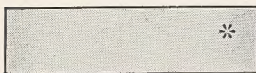


Figure 8

The Burroughs star, printed at the head of a column of listed items, proves that the machine was absolutely clear at the start, Keyboard, Non-add key and adding wheels included.

If this operation is performed when the machine is already set at zero the star alone will be printed. (See Fig. 8.)

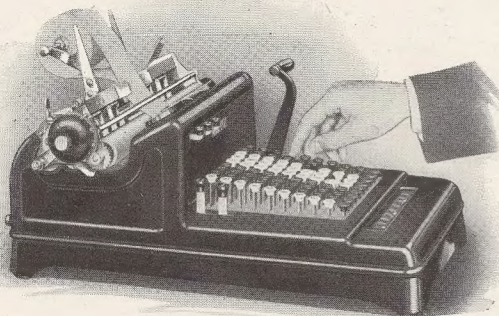


Figure 9—Listing

Press keys in proper columns corresponding to the numerals in the item desired; all ciphers print automatically

The visible adding wheels also show whether the machine is clear, but a star should always be printed before listing items to give a printed record that the machine was clear.

This enables the operator or anyone else who looks at the work to know absolutely that the total is correct because the machine was clear before work was started.

Listing Items is a Very Simple Process

THE operation of listing items is very simple and can be learned in a few minutes; it is necessary to depress only the keys representing the figures in



Figure 10—Printing

The depressed keys are automatically locked down when the handle is started forward, which prevents accidental change in the item to be listed

the items desired and to pull the handle. For instance, in order to list and add \$34.50, depress the 3 in the tens of dollars column, the 4 in the units of dollars column, the 5 in the tens of cents column (see Fig. 9) then pull the handle and release it (see Fig. 10), and 34.50 will appear on the dials at the front of the machine and will also be printed on the paper. (See Fig. 11.)

When a cipher occurs in the item do not depress any key in the column in which it occurs. For instance \$10.00 is "set up" by merely depressing the 1 in the fourth column.

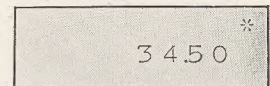


Figure 11

In listing 34.50, only the keys 3, 4 and 5 in the fourth, third and second columns should be depressed. The cipher prints automatically.

How an Item Can be Corrected

IF, by mistake, the wrong key should be depressed, a correction may be made in two, and on some machines in three different ways before the printing has taken place.

1. By the use of the Total or Sub-total keys at the left of the keyboard (Figs. 13 and 15). Depressing either of these keys instantly releases any amount which may be set up in the keyboard.

2. In the flexible keyboard, depressing a key on the keyboard automatically restores any other key in the same vertical column. For example, should it be

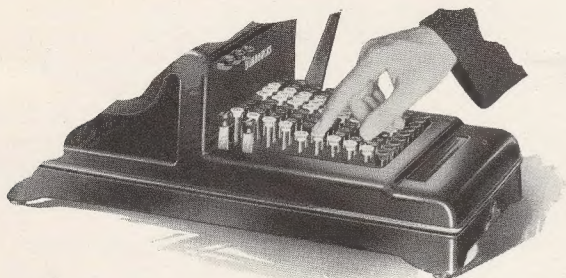


Figure 12—The Flexible Keyboard
Little time is lost in correcting mistakes made in depressing keys

desired to change 131.40 to 131.50, it would only be necessary to depress the "5" key in the second column; for as the "5" goes down, the "4" comes up.

3. On some models, by using the Column Correction key at the foot of each column. Should the incorrect item on the keyboard be 131.42, and the correct item be 130.42, by depressing the Column Correction key in the third column the "1" key is restored and the cipher will be automatically printed.

The Non-add key (Page 8) can be restored by the Total or Sub-total keys before the printing is done.

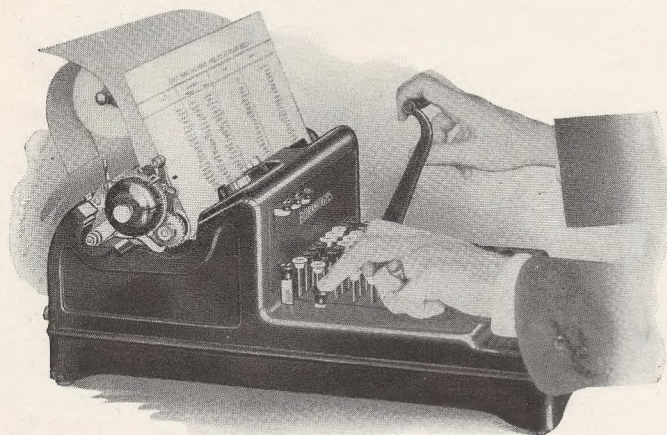


Figure 13—Printing Total
Simply hold the Total key down while the handle is started forward

How the Total is Printed

(Clearing the Machine)

AS the items are listed and printed in regular columns on the paper (see Fig. 14) the adding wheels change to include in the total the last item listed. Thus a correct total of all items listed may be transferred to the paper at any time.

After listing and adding the last item make a complete movement of the handle without any keys depressed. This makes a blank space on the paper between the last item and the place where the total will appear and is called the "spacing stroke." Then depress the Total key and hold it down until the handle is started forward. The accumulated total will then be printed on the paper (see Fig. 14) and in connection with it the star (*) to distinguish it from the items. If it is impossible to depress the Total key fully, it is because the spacing stroke has been omitted.

Printing the total as outlined above also automatically sets the machine at zero, or in other words, "clears" it.

							*
			3	4	5	0	
2	0	,	4	0	6	.	0
			1	0	3	.	5
3	0	,	4	0	5	.	0
3	5	,	0	0	4	.	0
			1	0	3	.	0
3	0	,	4	4	0	.	4
1	1	,	7	4	2	.	3
							7
							6
							*

Figure 14—The "Total" Star
The printing of the Star with the total distinguishes the total from other items avoiding all possibility of confusion.

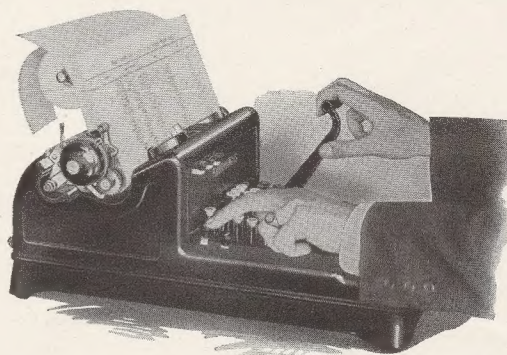


Figure 15—Printing the Sub-total
The letter "S" distinguishes a printed Sub-total, avoiding all possibility of it being confused with a grand total

To Print the Sub-total

IF desired, the accumulated total at any point in the list of items can be printed without "clearing" the machine or in other words the total may be carried forward. To print the sub-total, first make the spacing stroke, then depress the Sub-total key (see Fig. 15) and hold it down until the operating handle has started forward.

Where the Sub-total is Used

THE sub-total is often used in work where items are listed and added in parallel vertical columns, and where it is necessary to print the total of the column at the bottom and then carry it forward to the next column. A sub-total symbol "s" is automatically printed after each sub-total. (See Fig. 16.)

	*	1,325.07 s	1,656.11 s
34.56		3.44	23.43
45.44		34.56	23.4
345.67		45.33	3.45
223.43		23.23	4.34
34.56		76.78	34.06
5.43		8.78	6.07
343.32		7.67	70.65
46.65		16.65	56.08
33.22		45.45	7.09
56.87		43.54	1.23
67.77		4.34	2.12
9.77		4.53	3.35
7.88		8.96	45.00
70.50		7.78	33.40
1,325.07 s		1,656.11 s	1,948.72 *

Figure 16
Carrying the Sub-total forward. An example for practice

To Carry Forward the Sub-total

MOVE the carriage into position to print in the first column. Prove the machine clear by printing the star and list items in the regular way, continuing to the bottom of the sheet. Take the usual spacing stroke, depress the Sub-total key and pull the handle. The machine will print a total of all items listed but the amount will be retained in the machine.

Having completed the first column turn the platen back to the position at which the star was printed and shift the carriage so as to print in the second column. Re-print the sub-total at the top of the column, by depressing the Sub-total key and pulling the handle. Items may then be listed in the regular way and a sub-total taken at the bottom of the second column.

The process may be carried forward in this way into as many columns as the width of the paper will permit.

Printing on Wide Sheets

INSERT the paper, move the carriage to print in the first column and print the star. List items similar to the ones shown below and at the bottom of the sheet take a total of the first column.

Turn the platen back until the paper is in position to print where the first star was printed, shift the carriage to the second column print the "clear" signal and proceed as before. Continue in this way across the width of sheet.

*	*	*	*	*	*
4.50	.56	6.70	.10	9.10	1.22
4.60	1.20	4.50	.56	4.78	5.67
3.50	1.08	.34	.78	.34	4.20
.62	5.56	7.89	1.40	.43	7.80
.35	.23	1.20	.34	.20	1.33
6.71	.45	.45	3.45	.10	.26
3.40	4.50	.67	13.16	2.90	.71
.88	.33	2.40	2.45	5.60	.18
8	5.70	5.60	6.06	5.67	1.04
2.10	2.30	11.22	.33	8.30	3.07
6.73	5.60	9.04	3.45	.24	.81
11.08	4.50	1.23	11.20	.10	8.03
4.02	6.70	1.46	4.67	4.56	13.17
1.56	3.40	.78	3.20	11.90	7.20
.91	4.60	1.90	4.80	.21	3.80
51.04 *	46.71 *	55.38 *	55.95 *	54.43 *	58.49 *

Figure 17
Printing on wide sheets. An example or practice

Attaining Speed in Operation

SPEED in the operation of the Burroughs is simply a matter of use.

In listing items the hands should work up the keyboard toward the handle. Press the keys for the smaller figures first, regardless of their order. Thus in writing the item \$81.92 the 1 and 2 are depressed first, then the 8 and 9.

	*
4.50	
4.50	
4.50	
4.50	
18.00	*

Figure 18

The item 4.50 was set up on the keyboard. Repeat key locked down, and handle pulled four times.

Wherever possible two or more keys are depressed at one operation. For instance in listing the item \$2.43 all three keys are depressed simultaneously.

While at first the beginner will not be able to employ these methods with any speed, use of the machine will show how naturally methodical

fingering of the keyboard adapts itself to speed in operating the Burroughs.

How to Use the Repeat Key

(For Multiplication, etc.)

IF an item is to be listed several times in succession, or for multiplication, the keys for the item may be depressed and the Repeat key locked down, after which it is necessary simply to pull the handle as many times as the item is to be listed. The Repeat key is locked down by simply pressing it back as it

is pressed down, which latches it. It is released by a slight forward pressure of the finger.

When the last item has been listed, release the Repeat key and restore the depressed keys with the Total key, after which the spacing stroke and total may be taken in the regular way.



Figure 19—Repeat Keys

The Repeat key is locked by pressing it down and slightly away from the operator. To restore it press down and forward.

Consecutive numbers can be listed very rapidly by latching the Repeat key down and changing only the last figure after each operation, using the Column Correction key or the flexible keyboard.

The use of the Repeat key in multiplication and division is shown in detail on pages 14 to 19.

How and When to Use the Non-add Key

WHEN an amount has been set on the keyboard and the handle pulled forward with the Non-add key pressed down, the amount is printed but will not be accumulated in the addingwheels nor included in the total. Such an item is accompanied by a distinguishing symbol (#) which shows that the amount is a non-added item.

The Non-add key remains down during one operation only. It restores automatically after each operation. It may be released without a stroke of the handle by the Total key.

The Non-add key has four distinct uses.

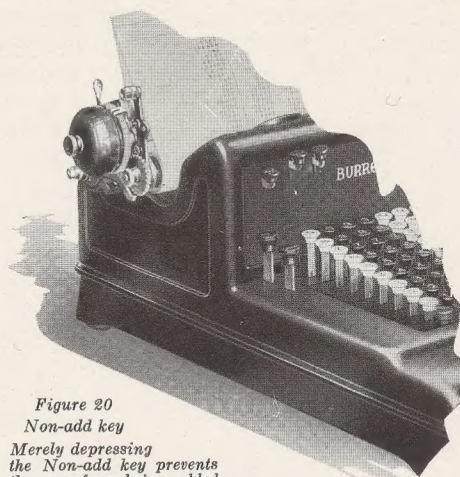


Figure 20
Non-add key

Merely depressing the Non-add key prevents the item from being added and causes it to be printed with the number symbol (#) to distinguish it.

	*
3434	
45.45	
45.60	#
56.56	
67.67	
56.70	#
78.78	
89.89	
67.80	#
7.89	
6.78	
78.90	#
5.67	
4.56	
15438	#
3.45	
2.34	
40338	*
40338	*

Figure 21

The Non-add key is a valuable feature in listing credits in a trial balance.

1: To List Credits in a Trial Balance.

It can be used to mark certain items in a list that are to be printed but not added. For example, in listing both debit and credit items the debits can be listed and added and the credit only listed by use of the Non-add key. The total then shows the sum of the debits, and the credits can be listed and totaled by simply "picking up" the marked (#) items and listing them in the regular way. (See Fig. 21.)

2: To Print Number.

It may be used to print, without adding, some abstract number such as clerk number, department number, car number, voucher number, etc. (See Fig. 23.)

3: To Mark Special Items.

The Non-add key can be used to mark certain items in a list, all figures of which are to be added. For example, in listing the charges for a month, if it is desired to mark those items that are "net" the others being "2% 10 days," this is done by first adding and listing the item in the regular way, then turning the platen back one notch and, without setting any figures in the keyboard, depressing the Non-add key and pulling the handle. This causes the symbol (#) alone to be printed, but as the carriage is shifted to the right when it is turned back to the item just listed, the symbol will come to the left of the item and will thus give it the distinguishing mark which means "net cash." (See Fig. 22.)

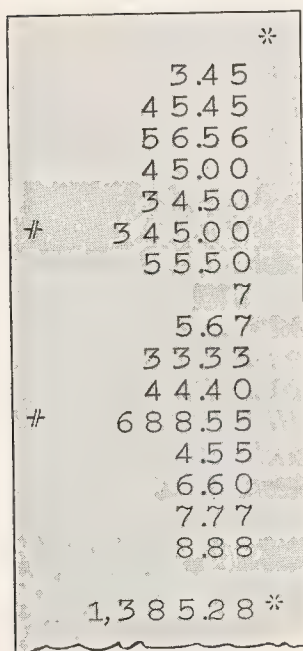


Figure 22

The Non-add key can be used to mark certain items in a list affected by special discounts, etc., permitting the items to be included in the total. The item is marked after printing by turning the platen back one notch, shifting the carriage to the right, depressing the Non-add key only and operating the machine.

4: To Correct an Item that has been Listed.

The operator may occasionally list and add an item which he at once realizes should not have been taken. He can then depress the Non-add key, subtract that item out of the machine (see Subtraction, page 14), turn the platen back one notch and print the non-add symbol to show that the item was not added into the total.

For instance, in Fig. 24, the item 4.56 was listed and accumulated in the adding wheels through error.

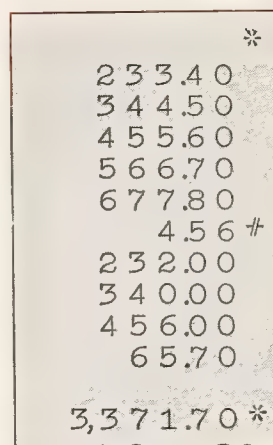


Figure 24

Before subtracting the item from the accumulating section, mark the item by turning the platen back one notch and printing the symbol (*). Then set the complement of 4.56 into the keyboard, i. e., 9,999,995.44. Depress the Non-print key and pull the handle. The item is now subtracted from the machine. Release the Non-print key and continue the work.

How and When to Use the Non-Print Key On Machines so Equipped (Adding Without Printing)

AT the rear of the keyboard, just to the right of the Repeat key is located the Non-print key. With this key depressed, items may be set up on the keyboard and added, but not printed. The feeding of the paper is stopped until the key is released.

This key has three valuable uses:

1. It may be used to add, without printing, any item or group of items.
2. When multiplying it is not necessary to have a long list of repeat figures appear on the paper. The Non-print key permits the operator to eliminate printing these if he so desires.
3. It can be used to correct items which have been listed and added. If any wrong item has been added, lock down the Non-print key and perform subtraction as directed on page 14, release the Non-print Key and mark the item with the Non-add sign to show that it is not included in the total.

The Non-print key is locked down by pressing it rearward. It remains down until released by pressing it toward the front of the machine.

You Can Safeguard Your Unfinished Work

THE removable handle of the Burroughs protects the operator against interference with his work when he is away. When called to the phone, for instance, or when leaving the work in the machine over night, he simply removes the handle (see Fig. 4, page 4), puts it in a safe place, and his work is as securely locked as if he had put the whole machine in the vault.

Figure 23
The Non-add key can be used advantageously in the recapitulation of sales by clerks or department number.

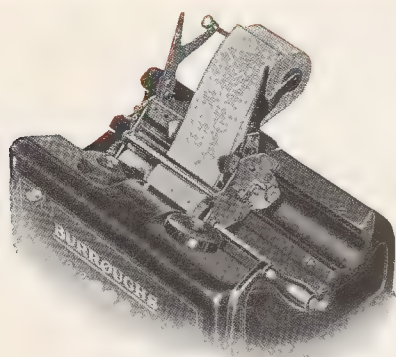


Figure 25
The Burroughs 3½-inch Carriage. Used for Roll Paper
Narrow Statements and Bank Deposit Slips

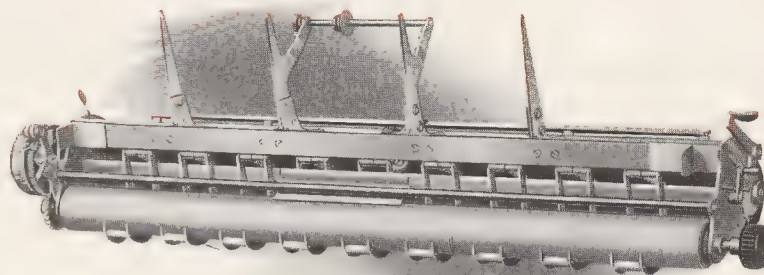


Figure 26
The Burroughs 20-inch Carriage. Used for
Wide Sheets and Roll Paper

The Operation and Use of Burroughs Visible Model Carriages

THE Visible Model is ordinarily furnished with one of two different width carriages—the 3½-inch, or the 12-inch. When desired, an extra wide 20-inch carriage is supplied. Except for size, all are identical in operation and are similar in construction to typewriter carriages. They have improved devices to control the insertion and feeding of paper, the lateral movement of the carriage, the spacing of items, etc. These features and their operation are described in the paragraphs that follow.

How a Wide Sheet is Inserted

THE insertion and handling of roll paper is described in detail on page 4. If the machine has been handling roll paper and it is desired to change to a wide sheet, it is not necessary to remove the roll paper from the hangers. Simply free the end of the roll paper by turning the platen backward and shift the sliding paper guides to the width of the sheet. Then insert the sheet in the platen, disregarding the roll paper entirely, and upon turning the platen twirler the paper comes into printing position, square and true (Figs. 27 and 28.) The sheet can be adjusted to any desired position by simply pressing the Pressure Roll lever.

Wide paper, when used, feeds *over* the paper knife and thus gives *complete* visibility to the printing.



Figure 27—Shifting Guides for Different Widths of Paper
This Machine has a 12-inch Carriage. The paper guides may be shifted to proper width to accommodate wide sheets



Figure 28—Adjusting Position of Paper
By holding the pressure roll lever, the paper may be adjusted to any position in the Carriage

Carbon Copies Are Made Same as on a Typewriter

CARBON copies may be made in the same manner as on a typewriter (Fig. 29). Where a great many copies are desired at one writing, the machine is specially prepared for such purpose by providing a heavier stroke of the type hammers.

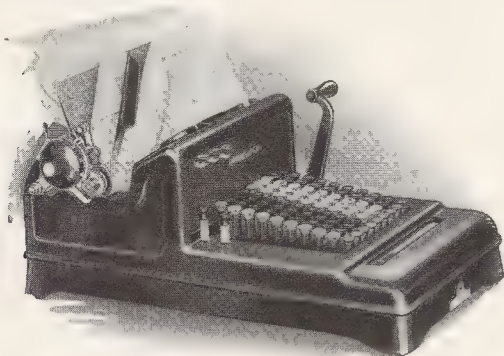


Figure 29—Carbon Copies
Carbon copies are made as easily as on a typewriter

How the Paper Carriage is Shifted

THE carriage can be shifted by pressing the Shift Lever (Fig. 30).

The Visible Model is particularly adapted to cross-tabulating work. Simply throw out the paper-feed by pressing forward the lever at the left end of the carriage (Fig. 32). Now the paper will not feed vertically, and the carriage is shifted to any position by pressing the Shift Lever, located at the right end. Ordinarily it is best to set the numeral keys first and then shift the carriage pulling the handle as the hand is brought back toward the keyboard.

Restore paper-feed after completing cross-tabulating work.

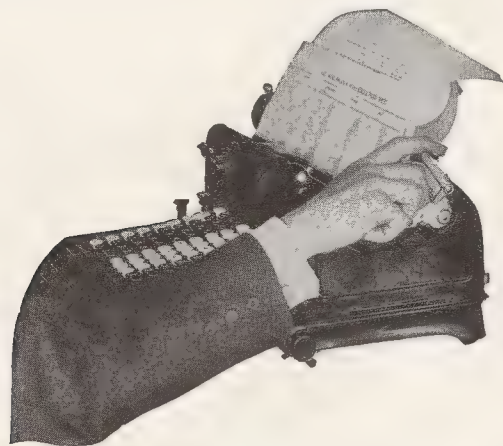


Figure 30—Shift Lever
The Burroughs Visible is particularly adapted to cross-tabulating work

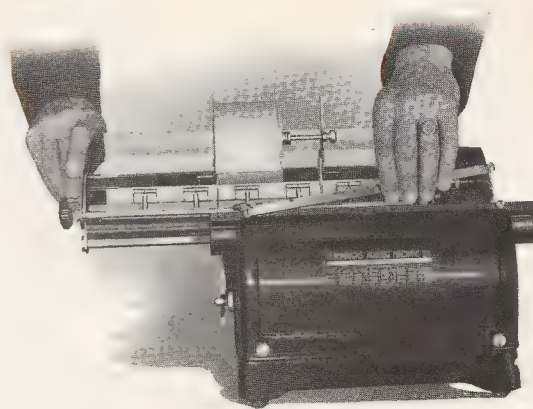


Figure 31—Stop Bars
Special Stop Bars for special work may be had and are quickly attached and taken off

How to Change Stop Bars

THE Stop Bar is at the rear of the carriage. It is instantly removed by shifting the carriage to the extreme right and withdraw the Stop Bar from under the two pins (Fig. 31). This permits a Stop Bar of any special spacing to be quickly inserted. Stop Bars to fit any vertical ruling may be had.

With these special bars, no time is wasted when using the machine on differently ruled forms.

By removing the Stop Bar entirely, the Shift Lever becomes at once a friction stop. In this way the carriage locks instantly in any position.

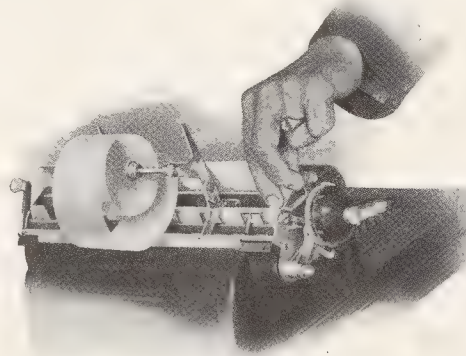


Figure 32—Adjusting Paper Feed Lever
The paper spacing lever has three positions—non-feed, single space and double space

How to Adjust Paper Feed

THE paper-feed is readily adjusted by the thumb lever at the left of the carriage (Fig. 32). When the lever is moved clear forward it is at non-space, and when rear-ward it is at double space. When at the middle it regulates the paper feed to the customary single space. These positions can be instantly determined by touch; it is unnecessary to use the eye.

Some Suggestions for the Operator

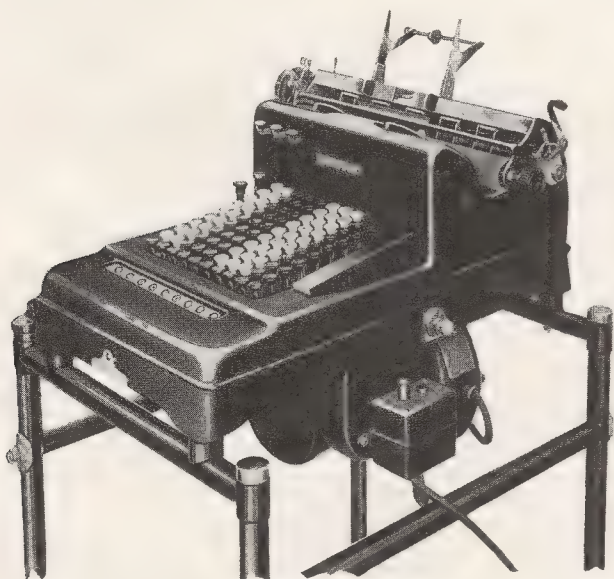
1. Before starting to add, see that Repeat key is not locked down.
2. Machine should be far enough away from the wall or desk to give the paper room to feed.
3. On electric machines be sure to turn off the current when not using.
4. See that paper guides are lined up on each side of paper.
5. Be sure lever for regulating paper feed is set at desired position—i. e. single or double space.
6. Always press Total key and pull handle before starting to use machine.
7. Machine should always be covered at night.

Burroughs Symbols Valuable on Record Work

THE printed record of a Burroughs tells a complete story, for the totals, sub-totals and non-added items all have their distinctive symbols. Whether the record is an original or a carbon copy there can be no occasion for uncertainty, for these symbols are evident in either case. Any person can tell at any time by referring to the work of the Burroughs just what has been done. That is why the Burroughs is used so extensively for permanent accounting record work.

The star gives a permanent record of every total or, when alone, indicates beyond all question that the machine was clear.

The Burroughs "s" indicates a sub-total; the "÷" indicates that the item was listed but not added.



Electric drive on 10-column Burroughs of the Class 300 line. Simply pressing the bar (at the right of the keyboard) operates the machine

Instructions for Electrically Operated Burroughs

EXCEPTING a few of the smaller models, any Burroughs Figuring and Listing Machine can be equipped with an electric drive. The motor takes the place of the handle pull, the handle being removed. A control bar is provided at the right of the keyboard which requires but a light touch with the fingers to operate the machine. If at any time it is desired to operate the machine by hand, the handle may be attached in a moment's time. (See Fig. 4. Page 4.)

Burroughs motors are furnished in two distinct types, to operate on either alternating or direct current. When the machine is not in use the current may be disconnected by means of the flush switch at the right side of the case. The Burroughs Automatic Time Switch is a device with which electrically operated machines may be equipped. It automatically shuts off the current after the machine has stood a short time without operating.

How to Use the Bell

THE Burroughs bell has four distinct uses, all of practical service in the handling of figure work. This device is provided on all standard Burroughs carriages which handle wide sheets.

1: A Paper Return Lock

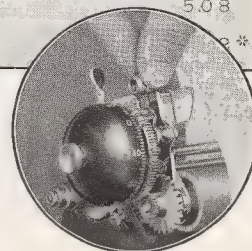
If the operator, in listing several columns of items on a wide sheet, desires to start the different columns on the same line (see Fig. 33) the bell can be used advantageously as a paper lock.

Insert the paper so that it is in the desired printing position for the first item. Engage the bell by de-

66.80	9.70	4.00	6.80	8.00
3.70	3.70	30.70	3.00	5.78
30.87	.87	7.50	.86	3.06
2.00	29.08	2.90	5.90	20.88
6.00	10.77	4.30	3.70	5.33
8.50	4.85	5.04	2.65	3.60
2.80	5.20	7.86	8.66	6.43
30.80	1.80	2.90	3.78	1.80
30.19	4.90	8.06		3.78
3.80	6.30	2.05	35.35*	5.05
2.77	.60	50.57		7.04
7.50		8.44		20.09
5.30	77.77*			7.00
		134.32*		5.08
201.03*				

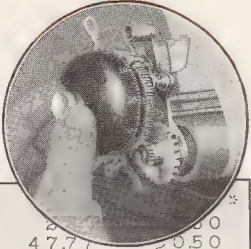
Figure 33

When used as a paper return lock the Bell detects automatically the proper printing position for the first item in each column.



pressing the latch clear down. This locks the platen at that point, preventing it from being turned further backward, though it may be turned forward as much as desired. So when the first column is completed all

that it is necessary to obtain the correct printing line at the beginning of the second column is to turn the platen back as far as it will go.



77.43	*	40.66	*	9.77	*	2.77	*	50.00	*
4.67		5.03		40.77		47.77		50.50	
30.76		2.88		20.87		20.98		60.20	
2.87		2.66		19.07		1.87		9.76	
4.29		80.44		7.99		3.76		2.80	
70.44		30.77		4.29		92.07		4.05	
38.07		30.86		2.97		10.79		70.70	
20.56		3.97		20.97		3.74		36.50	
2.44		4.77		20.74		4.60		59.08	
8.66		2.56		1.78		7.40		3.00	
4.06		1.98		3.86		2.70		5.78	
30.04		5.66		60.97		8.31		2.00	
8.44		9.44		19.39		6.00		7.60	
302.73*		221.68*		233.44*		212.79*		336.57*	

Figure 34

The Bell can be set to ring on the completion of a predetermined number of items

The bell after having once been engaged should remain set until the last column has been completed.

2: Warns When Items are Completed

Should it be desired to list one or more columns of a given number of items each (see Fig. 34) the bell may be set to ring and give warning when the last of the predetermined number of items has been listed.

For example, assume that 10 items are to be listed in each column. Place the paper in the carriage so that it is in the proper printing position for the first item, then lift the latch and depress it. As before, this locks the platen so that it cannot be turned back beyond the starting position. Pull out the knurled knob on the bell and turn it until the graduation "10" on the bell comes to the small pointer at the top. (See Fig. 34.) With the dial set in this position, the bell will ring on the ninth item if the "star" has been printed, warning the operator that one more item is to be listed.

For double spacing, set the dial at twice the number of items desired.

18.00	*	4.00	*	18.00	*	3.00	*	5.00	*
2.50		3.45		22.50		3.00		4.50	
23.00		2.60		15.00		4.50		3.50	
2.00		14.50		320.50		7.00		2.50	
15.00		1.30		7.50		5.00		10.00	
1.30		7.50		3.75		2.50		7.50	
20.00		5.65		4.50		4.00		7.50	
5.60		23.50		5.00		6.00		2.25	
10.00		6.45		27.50		5.25		5.00	
9.98		5.35		6.75		4.00		3.50	
2.75		12.55		5.40		3.98			
12.50						3.50		33.70*	
3.45		81.10*		436.40*		20.00		10*	
		11*		11*					
126.58*						53.73*			
13*						13*			

Figure 35

The Bell can be set to count the number of items listed in a column, for instance the number of sales made by a clerk or a department

3: Warns When Items Reach Bottom of Sheet

The bell can be used to sound a warning when items being listed in a vertical column reach the bottom of the sheet. When used in this capacity it performs its function as a paper return lock at the same time.

Obtain the proper printing position for the first item and engage the bell as explained under its first use. Revolve the platen by hand until the finder indicates the printing position for the last item in the column at the foot of the sheet. Pull out the knurled knob on the bell and turn the bell backward until it stops with the pointer at zero.

Revolve the platen backward until the paper return lock causes it to stop at printing position for the first item. When items are listed the bell will ring when the sheet reaches the position predetermined for the last item.

4: To Count Items Listed

The bell may be used to count the number of items that have been listed. Engage it as a paper return lock as explained under its first use, with the paper in the proper position for printing the first item. Run off the items and when the last item has been listed pull out the knob and turn the bell until the zero on the dial comes opposite the pointer. (See Fig. 36.) Pull up the latch, disengaging the bell, and the dial will revolve back against its stop and bring the number of items opposite the pointer. (See Fig. 37.)

This use of the bell works out to especially good advantage in totaling the number of sales made by any one clerk or department. The number of items in the column may be printed below the total, using the non-add key. (See Fig. 35.)

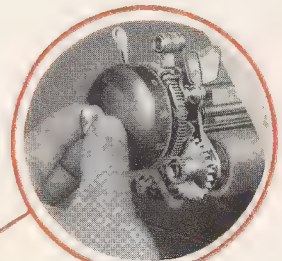


Figure 36

When items have been listed and before total is taken, set the Bell at zero.

Burroughs Durability

SOME of the machines built by us in 1893 are still in active service today and continue to give satisfaction by their accuracy and service.

We don't know how long a Burroughs will last, many of the older models have come back to us in exchange for later Burroughs models, but we have never seen a worn out Burroughs.



Figure 37

Raise the latch, disengaging the Bell, and the dial will revolve backward and show opposite the pointer the number of items that have been listed.

How to Subtract, Multiply and Divide

Checking Invoices, Figuring Discounts, Computing Interest, on the Burroughs

Definitions

- Minuend.....The number from which another is to be subtracted.
 Subtrahend....That which is to be subtracted.
 Multiplicand...A number to be multiplied by another.
 Multiplier.....A number by which another is to be multiplied.
 Dividend.....A number to be divided.
 Divisor.....That by which a number is divided.
 Complement...The complement of a number is another number, which, when added to the first number, will give a sum equal to ten or a power of ten; i. e., 10, 100, 1,000, 10,000, etc. Thus the complement of 7 is 3; of 38 is 62; of 3467 is 6533.

NOTE—To get the best results it is advisable to run through all the explanations carefully with the machine at hand, so as to work out each step in the order it is explained.

How to Subtract on a Burroughs

TO perform subtraction on the Burroughs, it is only necessary to add to the minuend the *complement* of the subtrahend and also all of the 9's to the left of the subtrahend. The result will be the remainder.

To determine the complement of a number commence at the left of the number and add to each figure enough more to make 9—except to the last figure at the right, to which add enough to make 10. When the last right-hand figure or figures are ciphers, disregard them; add enough to make ten to the last figure to the right, which is not a cipher.

Suppose we desire to find the complement of 1604. Commence at the left and set down under the 1 an 8, under the 6 a 3, under the 0 a 9, under the 4 a 6. These figures, 8396, are the complement of 1604.

The complement added to the first number will make 10,000 or the 4th power of 10.

If it is required to subtract 1604 from 29,872, we first put the minuend 29,872 in the machine. Then strike the complement of 1604; viz., 8396, together with all the 9 keys to the left of the subtrahend, so you will have 999,998,396 on the keys, as illustrated, then pull the handle, and the result on the dials will be the remainder of 28,268. (See Fig. 44.) The subtrahend may be printed by the use of the non-add

key where a full picture of the operation is desired. The object in striking the row of 9's is to carry the 1, which would otherwise appear on the dial to the left of the remainder, out of and beyond the capacity of the machine.

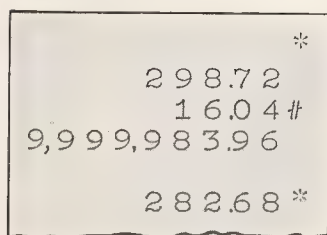


Figure 44—Subtraction
29,872—1604

Multiplication with Burroughs Machine

MENTAL multiplication of figures, particularly where fractions are involved, is tedious work for anyone. The business man has found this true when figuring percentages, extending stock inventories, verifying invoice extensions and totals, etc.

In fact the time and effort required to do such work have discouraged some business men from keeping many of the records they need.

And yet multiplications of both whole numbers and fractions can be handled on the Burroughs in much less time than by the old hand method and with very little mental effort.

Furthermore the Burroughs method of multiplication is simple to learn. One who has never used an adding machine can, after thirty minutes' practice, multiply with the Burroughs faster and easier than by the mental process.

Multiplication is simply repeated addition or, in other words, a short method of making many additions of the same number.

The biggest element of chance for error in multiplication of fractions is in pointing off the decimal places.

On the Burroughs keyboard each column of keys is numbered from 1 to 9 so that a multiplier can be set in any position on the keyboard. This makes it possible to multiply either from right to left or left to right.

The old mental method is to multiply from right to left. *By multiplying from left to right on the machine the decimal point may be predetermined where fractions are being handled and thus avoid any likelihood of error in pointing off the product properly.*

Multiplying from Right to Left

TO multiply 566 by 435, first latch down the Repeat key and depress the keys representing 566. Then multiply by the 5 of the multiplier 435. Multiplying by five is of course merely adding 566 five times; so pull the handle five times. The next step is to multiply by the 3 in the multiplier. Restore the keys 566 by depressing the Total key and set them over one column to the left of their former position. By pulling the handle three times 566 is multiplied

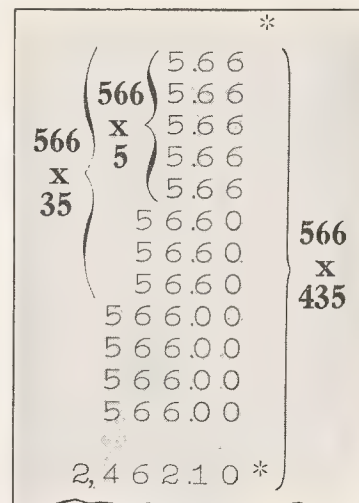


Figure 45
566 x 435 and the Total (disregard the punctuation printed by the machine)

by 30. So far then we have multiplied 566 by 35 and it remains to complete the work by multiplying by the 4 in the multiplier. This is accomplished by setting the 566 one column farther to the left, and pulling the handle four times. The total is then taken in the regular way and the product 246210 is printed on the paper. (See Fig. 45.)

In multiplying from right to left use the simple arithmetic rule in pointing off, i. e., point off as many places from the right as there are decimal places in both multiplier and multiplicand.

Multiplying from Left to Right

TAKE the same problem 566×435 . Latch down the Repeat key. The first step is to multiply by 4, the first figure of the multiplier.

Set the amount 566 in the keyboard so that the first figure 5 is in the second column from the left. This leaves the left-hand column for "carrying into." Pull the handle four times. Set the amount 566 one place to the right and pull the handle three times to multiply by 3, the second figure of the multiplier.

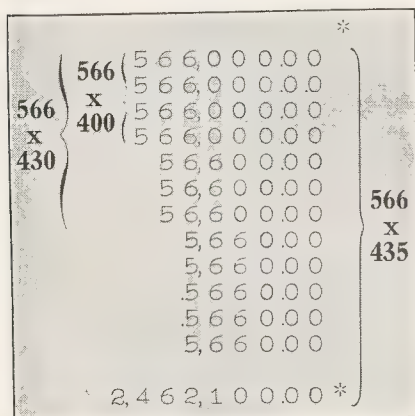


Figure 46
 566×435 —Multiplying from left to right

low: Begin with the extra left-hand adding wheel and point off to the right as many places as there are whole numbers in both multiplicand and multiplier. If a multiplier has no whole numbers and there are ciphers to the right of the decimal point, point off to the left one place for each cipher. In the problem 566×435 there are six whole numbers (i. e., six figures that are not decimals) so point off six places from the left including the extra dial on the left, whether or not a "carry" has gone into it.

Calculating Without Printing

ON machines equipped with the Non-print key it is not necessary to print the figures when using the Burroughs for calculating. Many operators, as they become expert, handle this work with the Non-print key depressed. This prevents the figures from printing. It also prevents the paper from feeding and thus avoids any waste of paper. The total is accumulated on the adding wheels and may be copied from them, or may be printed on the paper by releasing the Non-print key.

Multiplying When one Multiplier is Already on the Dials

WE will assume that the dials show 181,473 and it is required that this amount be multiplied by 766. It is obvious that having one amount already on the dials, it will only be necessary to add to it 765 times itself to produce the correct result.

Lock down the Repeat key. Set 765 on the keys so that the 5 comes immediately over the left-hand figure 1 on the dial. Then with the eyes on the dials pull the handle as many times as the figures on the dials indicate; thus make one stroke at the beginning, for there is a 1 on the dials. Release the keys by pressing the Total key and set 765 one place to the right, pull the handle eight times because 8 is the next figure on the dials. Then continue setting the multiplier one place to the right and pulling the handle as many times as the corresponding figures on the dials indicate. Finally release the keys, make a spacing stroke, and take the total. The dials then read 139,008,318, which is the product of 181,473 times 766.

This method of working from left to right is advantageous where an addition has been made, the total of which is to be multiplied. This method can be used without cancelling the machine, setting the figures down on paper, or memorizing them. This is particularly useful in computations of interest where one multiplication is made and the product is multiplied by another amount.

Multiplication of Fractions

THE first step is to reduce fractions to decimals. The arrangement of the Burroughs full keyboard is a distinct advantage in the multiplication of fractions for three reasons:

1. A fixed decimal point can be used. Mistakes in "pointing off" are responsible for a large percentage of errors in multiplication of decimals. The fixed decimal point makes such mistakes almost impossible.
2. When a permanent common decimal point is used, the total of several multiplications may be permitted to accumulate in the machine and a grand total of all of them may be printed without totaling each problem and then recapping the totals.
3. By multiplying from left to right the handle is first pulled the number of times represented by the left-hand figure of the multiplier, then the next to the right, etc. It is easier to read and remember the multiplier in the sequence in which it is written than to remember the figures backwards.

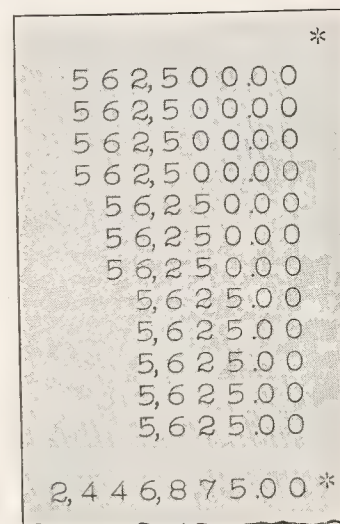


Figure 47
 $56\frac{1}{4} \times 43\frac{1}{2}$

Invoices Checked in One-third the Time

BEFORE a good business man will send his check in payment for a bill of goods he proves the accuracy of the invoice.

Ordinarily this proof requires considerable "figuring" for it frequently involves the multiplication of fractions as well as whole numbers. Work of this kind takes time and often comes when time can ill be spared. Even when there is no press of other business, the process is more or less tedious when done mentally.

This work can be done on a Burroughs with practically no mental effort and in a mere fraction of the time required without the machine.

Take an invoice like the following for an example:

288 Brooms.....	at	\$0.12½	\$ 36.00
140 lbs. Coffee.....	at	.21½	29.57
75 lbs. Candy.....	at	.04¼	3.19
56 yds. Linoleum.....	at	1.12½	63.00
			\$131.76

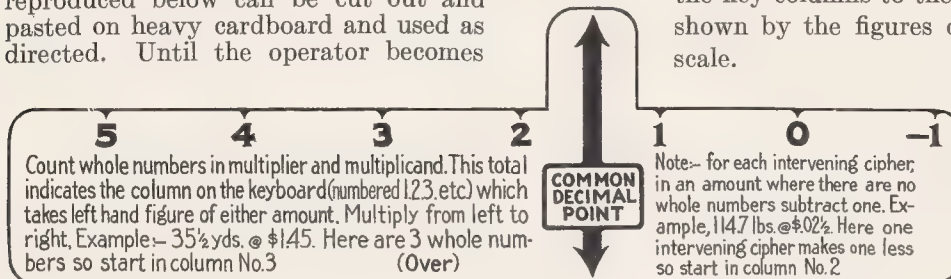
A young man accustomed to checking invoices verified this one *mentally* in one minute and thirty seconds.

The same invoice was proved by a Burroughs operator in 20 seconds. While this may be somewhat faster than the inexperienced operator in an office would operate the machine, you or one of your employees can check this invoice in thirty seconds after using the machine a week or so, which is, after all, the comparison that interests you.

It means not only an actual saving of two-thirds the time ordinarily spent on checking invoices mentally but the work is done accurately without any mental strain.

The Burroughs Multiplying Scale

BELOW is described a simple method of multiplying in decimals and pointing off automatically. We have a supply of these scales printed on heavy bristol board and if requested, will gladly send a reasonable number to any address. In an emergency the scale reproduced below can be cut out and pasted on heavy cardboard and used as directed. Until the operator becomes



expert it is desirable to print the result of the work on the tape paper. In this particular problem the tape will appear as shown on page 17.

Table of Decimal Equivalents

	6ths	7ths	8ths	9ths	11ths	12ths	13ths	14ths	15ths	16ths
1.	.1667	.1429	.125	.1111	.0909	.0833	.0769	.0714	.0667	.0625
2.	.3333	.2857	.25	.2222	.1818	.1667	.1538	.1429	.1333	.125
3.	.5	.4286	.375	.3333	.2727	.25	.2308	.2143	.2000	.1875
4.	.6667	.5714	.5	.4444	.3636	.3333	.3077	.2857	.2667	.25
5.	.8333	.7143	.625	.5555	.4545	.4167	.3846	.3571	.3333	.3125
6.		.8571	.75	.6667	.5455	.500	.4615	.4286	.4000	.375
7.			.875	.7778	.6364	.5833	.5358	.5000	.4667	.4375
8.				.8889	.7273	.6667	.6154	.5714	.5333	.5
9.					.8182	.75	.6923	.6428	.6000	.5625
10.					.9091	.8333	.7692	.7143	.6667	.625
11.						.9167	.8462	.7857	.7333	.6875
12.							.9231	.8571	.8000	.75
13.								.9286	.8667	.8125
14.									.9333	.875
15.										.9375

Note—Above is a table of Decimal Equivalents of common fractions. This is very useful in all calculating work in which fractions are used.

Checking Invoices and Pointing off Automatically

LAY this scale at the bottom of the keyboard with the arrow between ANY two columns of keys (usually between the 5th and 6th as this gives plenty of capacity for decimals). This designates or numbers the key-columns to the right and left of the arrow as shown by the figures on the UPPER EDGE of the scale.

Put down on the keyboard either multiplier or multiplicand, i. e., either price or quantity, the proper starting position on the keyboard being ascertained by the rule on the scale.

By "whole numbers" is meant any figures to the left of the decimal point.

Copyright 1915. Burroughs Adding Machine Co.

*Four Items Have Been Extended
in this List*

Division

(Without the use of a “stroke wheel.”)

DIVISION on the Burroughs Adding and Listing Machine is somewhat more difficult to explain in print than addition, multiplication, or subtraction; but the process is not so involved as it at first appears.

In the first place to explain the process more readily, we must consider that the division of 3492 by 15 means practically the process by which we find out how many times 15 can be subtracted from 3492. In order to do this, we put 3492 into the machine so that the amount shows on the right-hand dial wheels. We first find out how many times the divisor is contained in the first two figures of the dividend 3492. Proceed as follows:

*Use the Complement of the Divisor throughout**

Put the complement of 15, which is 85, on the keyboard in the columns directly over the dial wheels in which the number 34 appears. Depress 9 in the first column to the left of the figures 85 (depressing the 9 causes the machine to carry into the next column to the left).

The Repeat key is locked down during the entire operation.

Pull the handle and the dials show 000101992 (on a 9-column machine) and the two dials which formerly showed 34 now show 19. Therefore 15 has been subtracted from 34 once. Inasmuch as 19 is still larger than 15, pull the handle once more. The dials now show 000200492 and the two dials which originally showed 34 now show 04. Fifteen has been subtracted from 34 twice, leaving a remainder of 4 and the first subdivision is finished.

It now becomes necessary to "bring down" the next figure, 9, of the dividend, and this is done by moving the complement of the divisor one column to the right. To do this release the depressed keys and depress the same keys, 985, one column further to the right.

After pulling the handle three times we find that the 04 appears on the dials where the figures 49 appeared before. We have, therefore, subtracted 15 from 49 three times, leaving a remainder of 4.

The next step is to bring down the fourth figure, 2, of the dividend. Two handle pulls and 42 is reduced to 12. Looking on the dials we find that 15 has been subtracted from 3492 two hundred and thirteenth times, leaving a remainder of 12.

Depress the Total key to restore the depressed keys, make the usual spacing stroke, and take a total. This will show the amount 232012. This is read 232 and 12/15.

Always point off from the right as many spaces as there are figures in the divisor. Cross out one cipher to the left of this point. The figures on the left of the cipher which we have crossed out represent the whole number part of the answer. The figures on the right of that cipher represent the numerator of the fractional remainder—the denominator being, of course, the same as the divisor.

* Definition of Complement is given on page 14.

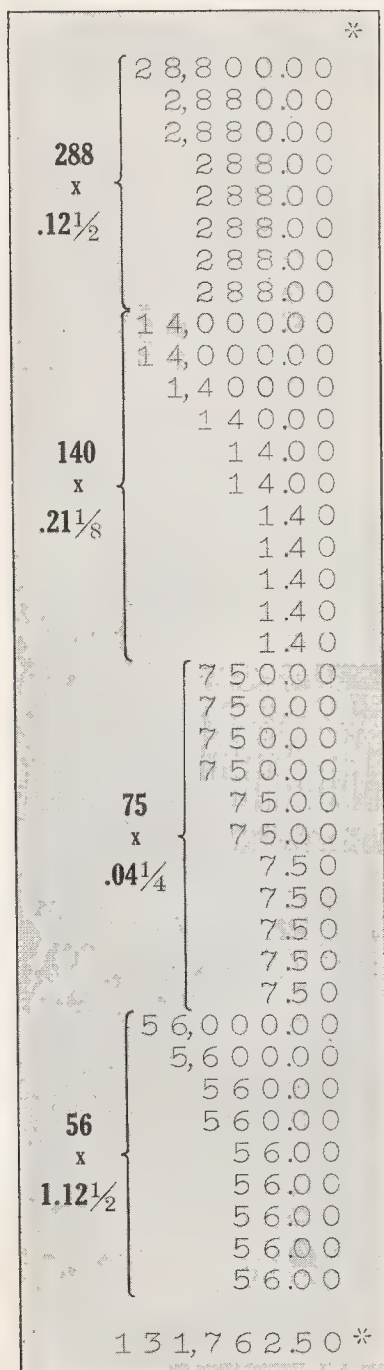


Figure 48

Showing Method of Checking Invoice when only the total of the entire invoice is wanted

With a Burroughs Duplex Machine the extension of each item can be printed and a grand total of all the extensions automatically secured without the necessity of recapitulating.

Rule—Mark on the printed list, the column, corresponding to the decimal point in the dividend, and point off as many places to the left as there are whole numbers in the divisor.

Example—Divide 122345 by 387.

First, mark the column to correspond with the decimal point in the dividend; thus: 122345. Then point off as many places to the left as there are whole numbers in the divisor. There are three whole numbers in the divisor; therefore point off three places to the left, thus: 122.345. The decimal point in the answer will be located in the corresponding column.

2. Where there are no whole numbers in the divisor:

Rule—Mark the column to correspond with the decimal point in the dividend, and the decimal point in the answer will *remain* in that position.

Example—Divide 43.25 by .35.

First, mark the column to correspond to the decimal point in the dividend; thus 43.25. Since there are no whole numbers in the divisor, the decimal point is left in this position.

3. Where no whole numbers appear in the divisor and ciphers follow immediately after the decimal point in the divisor:

Rule—Mark the column to correspond with the decimal point in the dividend and point off as many places to the *right* as there are ciphers in the divisor.

Example—Divide 4.325 by .0035.

First, mark the column to correspond with the decimal point in the dividend; thus 4.325; then point off to the right as many places as there are ciphers in the divisor thus 432.5. The decimal point in the answer will be located in the corresponding column.

Short Cut Methods for Handling Problems in Division

Note—Inasmuch as Division is necessarily a more difficult operation than multiplication, it is very often desirable to substitute multiplication for division. This is readily accomplished by the use of Reciprocals.

The Use of Reciprocals

THE reciprocal of a number is 1 divided by that number. For example the reciprocal of 2 is $\frac{1}{2}$, which is equal to .5. The reciprocal of 4 is $\frac{1}{4}$, which is equal to .25. The reciprocal of 256 is 1 divided by 256, which is equal to .003906.

Reciprocals are used to facilitate division; the operation is to multiply the dividend by the reciprocal of the divisor. This can readily be seen by the following example:

12

— is the same as $12 \times \frac{1}{2}$

2

$\frac{1}{2}$ is the reciprocal of 2 and is equal to .5. $12 \times .5$ is equal to 6.0, which is the same result that would be obtained by dividing 12 by 2.

This method is very convenient when there are several amounts all to be divided by the same number.

For example, suppose the following sheet is a part of the record showing the number of pounds of ore in car load lots. Each one of these car load lots must be reduced to long tons; that is, each one must be divided by 2240 because there are 2240 pounds in a long ton. Instead of dividing every one of these numbers by 2240, we first find the reciprocal of 2240, which is .0004464, and then multiply each one of these numbers by this reciprocal.

56423 pounds	=25.19 long tons
72685 "	=32.45 "
83761 "	=37.39 "
42680 "	=29.11 "
65468 "	=29.22 "
45800 "	=20.45 "
61900 "	=27.63 "
92754 "	=41.41 "
72000 "	=32.14 "

Multiplying the first number, 56423, by the reciprocal of 2240, which is .0004464, the dial wheels show 251872272. There are seven places to point off, which gives the result 25.19 tons. There will be seven places to point off in each example; so the point will remain in the same position throughout the entire work. The other examples are worked in the same manner.

A table of the reciprocals of numbers from 1 to 2000 and reciprocals of numbers in common use, such as a gross ton, a bushel, etc., will be sent free to any address on request. (See page 27.) These tables will be found very useful in converting pounds into gross tons, cubic feet into bushels, cubic inches into gallons, etc.

For example, suppose there are 34463 square yards in a tract of land and you wish to reduce this to acres. Turning to the table we find that there are 4840 square yards in one acre. The reciprocal of 4840 is .0002066, so we simply multiply 34463 by .0002066 and point off seven places; the result is 7.12 acres.

Example. Suppose we had 15365 cubic feet, and we wished to reduce this to cubic yards. Turning to the table we find that there are 27 cubic feet in a cubic yard and that the reciprocal of 27 is .037037. Multiplying 15365 by .037037 and pointing off six places we obtain the result, 569 cubic yards.

We also issue a table giving the weights of a cubic foot of different materials and their reciprocals. Besides being useful as a reference table, the reciprocals can be used to find the volume of a mass of material when the weight is known.

For example, suppose you had 12 tons of anthracite coal, 2000 lbs. to the ton, and you wish to find out how much space it will occupy. By referring to the table we see that anthracite piled loose, weighs about 55 pounds a cubic foot; the reciprocal of 55 is .01818. By multiplying 24000 by .01818 we get 436.32 cubic feet, which is the space occupied by 12 tons of coal.

Proving the Ledger Postings

THE Burroughs Figuring and Listing Machine will handle all the figure work of the average business. However, because of limited space, we can show only the more common uses of the machine here.

Thousands of business houses are proving ledger postings with a Burroughs along the plan illustrated. Markers are placed in the ledger at the pages on which each posting is made.

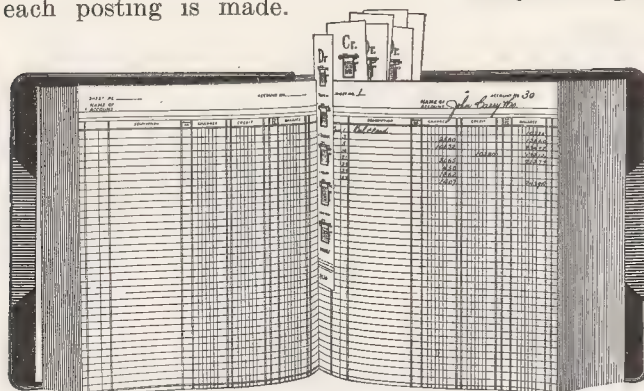


Figure 49
Debit and credit markers placed between the ledger pages show where postings have been made

(See Fig. 49.) To distinguish debit from credit postings different colored markers are used. Some bookkeepers place the debit markers so they project from the top of the page and the credit markers from the bottom.

When the postings have been completed a proof sheet (see Fig. 50) is inserted in the Burroughs and the amounts indicated by the projecting debit markers are listed and added. The projecting credit markers are then handled in the same way. The totals of the debits and credits should agree with the totals of the debits and credits on the sheets or source from which the postings have been made.

If there is a difference, the error can be quickly located as the markers are allowed to remain in the ledger until the balance is obtained.

By securing this proof daily or as frequently as postings are made, the accuracy of the month-end trial balance is assured.

A to H		I to Q		R to Z	
*	647.42 s	*	653.44 s	*	
17.68	212.30	89.87	5.56	3.56	
7.65	45.40	45.70	6.34	34.20	
23.78	132.55	34.30	234.30	45.40	
123.21	235.00	6.56	195.40	55.60	
34.30	70.50	5.50	35.45	56.09	
6.50	3.89	69.76	145.30	25.46	
55.50	3.56	75.68	23.80	56.78	
5.67	28.60	8.60		7.50	
45.60	23.20	64.42	1,299.59 *	6.90	
37.87	200.26	45.60		4.34	
19.36	5.50	84.56		33.50	*
123.23		8.70		110.23	1,608.18
46.60	1608.18 *	56.40		8.56	1,299.59
55.67		23.45			448.12
44.80		34.34		448.12 *	3,355.89 *
647.42 s		653.44 s			

Figure 50
Debit and credit postings as indicated by markers placed in the ledger are printed and totaled on a sheet

Trial Balance—Using Ledger Balances

FIGURE 51 illustrates the Burroughs method of taking a trial balance where ledger balances are used. Any Burroughs Listing Machine may be used for this work.

The first step is to turn through the ledger and list with the machine all the debit balances. Where a credit balance occurs a marker is placed in the ledger.

When all debit balances have been listed a total is taken. The paper carriage is then shifted to the proper column and credit balances, the location of which are shown by the projecting markers, are listed and a total taken.

Figure 51 also illustrates this work where it is desired to carry a sub-total from the bottom of one column to the top of the next.

A trial balance is not only secured at the first attempt, but the work is completed in less time than is required by the pen-and-ink method to simply write down the items.

Dr.	Dr.	Dr.	Dr.	Dr.	Cr.
*	855.85 s	1,480.27 s	1,879.36 s	2,150.15 s	*
54.40	3.45	45.30	34.50	4.00	350.00
35.60	43.56	3.45	3.50	35.40	500.00
4.50	54.50	2.34	5.30	5.00	34.50
56.70	121.12	23.40	54.40	45.00	45.00
133.00	109.90	34.20	33.50	33.00	346.00
324.00	56.60	3.44	5.20	23.00	54.00
45.50	44.34	32.20	2.35	66.00	23.45
3.45	53.30	24.30	34.10	5.60	40.30
32.35	43.35	46.60	2.34		342.20
54.35	4.50	67.40	33.40	2,337.45 *	34.56
60.00	6.00	45.30	4.50		56.50
45.60	50.00	48.6	23.20		510.94
6.40	34.00	66.30	34.50		
855.85 s	1,480.27 s	1,879.36 s	2,150.15 s		2,337.45 *

Figure 51
Trial balance sheet on which the debit balances and credit balances have been listed and totaled in separate columns

Trial Balance—Using Non-Add Key for Credits

IN Figure 54 is shown how advantageously the Non-add key lends itself to taking a trial balance using ledger balances. With this plan it is necessary to make but one trip through the ledger.

Debit balances are listed in the regular way. When an account is reached which shows a credit balance the credit is listed with the Non-add key depressed.

When all debits have been listed and the total printed the Non-print key is depressed and the credits, as shown by the Non-add symbol "+/-" listed. The Non-print key is restored when the total of the credits is taken.

hand previously, the value of the goods on hand may be secured.

On page 22 an excellent method of recapitulating sales by clerks is shown.

A Daily Ledger Balance

AT each posting a new balance is extended and a marker inserted at the page where accounts have thus changed.

Having completed postings, a proof is made by first listing and adding on the Burroughs (see Fig. 52) the old balance on the accounts which have changed that day. By going through the ledger again the new balances of the same accounts are listed and added.

Old Balance			New Balance		
*	847.46s	1,656.67s	*	919.67s	
212.77	24.23	120.00	243.96	156.50	
25.50	32.50	33.50	34.50	145.65	
32.35	132.55	3.40	150.00	100.00	
11.55	50.00	134.45	25.00	22.50	
50.00	25.65	44.50	25.00	32.55	
22.65	32.50		235.75	42.50	
211.65	133.65	1,994.52 *	150.00	150.00	
33.76	75.00		33.50	25.00	
45.76	26.25		132.55	47.56	
12.86	142.80		12.50	350.00	
23.56	55.67		75.76	452.41	
122.50	33.21		25.65	210.00	
42.55	45.20		45.50		
847.46s	1,656.67s		919.67s	2,654.34 *	

Figure 52

Daily Ledger Balance showing listing and totaling of old and new balances

Recapitulating Sales

FIGURE 53 shows a simple way of recapitulating sales by departments or kinds of goods sold.

The form is made up directly from the previously assorted invoices or sales slips. Sheets similar to the sample illustrated up to 18 inches in width and containing 12 to 20 columns can be prepared on the Burroughs.

By charging to each department the purchases for that department together with its share of the expense, and crediting it with all sales from that department, a very close estimate of the profits produced by each division may be secured.

By subtracting the gross profit on the goods from the sales of each department and then subtracting this amount from the goods on

A new account opened that day is considered a new balance; if an account has been closed the old balance only is used.

Add to the total of the old balances the footings of the Sales Book

Dry Goods	Groceries	Clothing	Boots & S.	Hardware	Misc.	Total
*	*	*	*	*	*	*
18.00	4.50	18.00	3.00	5.00	12.50	
2.50	3.45	22.50	3.00	4.50	8.00	
23.00	2.60	15.00	4.50	3.50	24.00	
2.00	14.50	12.50	7.00	2.50	20.00	
15.00	1.30	32.50	5.00	10.00	6.00	
1.80	.75	7.50	2.50	7.50	.75	126.58
20.00	6.65	3.75	4.00	.75	7.50	81.60
5.60	23.50	4.50	6.00	2.25	25.00	160.90
10.00	6.45	5.00	5.25	.50	4.00	53.73
9.98	5.35	27.50	4.00	3.50	.50	33.70
2.75	12.55	6.75	3.98		4.65	120.90
12.50		5.40	3.50	33.70 *	8.00	
3.45	81.60 *		2.00			577.41 *
126.58 *		160.90 *	53.73 *		120.90 *	

Figure 53

Sales Sheet showing sales listed and totaled by kinds of goods

and the total of cash paid out. To the new balances add the total of merchandise returned and total of cash received. The results should balance.

This proves the postings and balances, and checks the footings of the Cash Book, the Sales Book and merchandise returned.

*	2,329.44s	4,054.55s
34.50	34.34	3.40
445.00	43.40	34.30
34.40	54.50	55.00 *
233.30 *	65.60	6.50
34.50	556.00	45.00
53.50	45.30	34.40
440.60	212.00	42.20
35.70	23.10	34.20
54.55	2.34	121.00
335.00	33.60	12.30
23.40 *	6.48	23.80
32.40	8.55	402.06 *
44.56	3.00	55.66
56.40	34.00	66.30
45.67	2.30	34.55
77.40	6.44	5.66
4.00	45.40 *	63.05
5.55 *	53.66	5.00 *
3.77	66.30	44.65
7.65	330.40 *	6.43
54.04	45.60	76.43
22.20	67.70	664.30
54.43 *	3.50	5.05
7.50	5.33	33.00
7.66 *	30.05	2,500.00 *
45.60 *	55.70	1,543.51 *
4.50	70.50	10.00
33.04	66.00	15.00
43.00	77.60	340.92 *
50.00	.78	
50.00	44.50 *	5,491.73 *
45.70	3.44	
65.00 *	40.50	5,491.73 *
45.66	50.60	
234.20	2.44	
2,329.44s		4,054.55s

Figure 54

Trial Balance Sheet showing the credits marked with Non-add (+/-) symbol, the debits only being added. Credits are added in another operation.

CASH SALES					
*					
1#	3#	4#	4.46	s	
1.00#	1.01#		4.50		
.45	.50		2.70		
.65	4.60				
.75	.75		11.66*		
.10	1.10				
2.35	5.00		1.03#		
5.00	6.75		.35		
.54	.35		.70		
.20			6.35		
1.35	19.05*		1.27		
3.97			1.00		
15.36*					
8.00					
2#	4#		6#		
1.00#	.93		1.02#		
.35	4.45		.65		
1.32	6.57		3.45		
.30	.25		.80		
3.50	1.65		.90		
7.00	4.56		1.60		
5.75	1.20		.75		
1.75	.63		7.00		
.35	1.02		3.56		
.50	1.25				
20.92*					
7.00					
1.01#	5#		1.03#		
1.50	1.01#		7.00		
.75	.96		5.68		
5.00	.75		15.00		
2.35	.55		3.86		
.90	.75				
.75	1.10		31.54*		
3.45	.75				
6.50	.60				
20.20*					
4.40					

CASH SALES RECAP.					
DEPT	100	101	102	103	104
1	15.36				15.36
2	20.82	20.20			41.02
3		19.05			19.05
4		30.96			30.96
5		11.66		9.67	21.33
6			18.71		18.71
7				31.34	31.34
8					
9					
10					
TOTAL	56.18	81.87	18.71	41.21	177.97

CHARGE SALES					
1#					
1.00#	1.01#	7#	1.00#		
3.45	4.50		2.45		
8.95	5.65		6.50		
.86	8.85		4.65		
.50	1.25		3.45		
5.60	4.30		.75		
4.95			8.00		
.25	2.455*				
.35			2.580*		
25.51*					
7.00					
3.47					
2#					
9.00					
1.01#	1.150		1.03#		
1.10	3.45		3.45		
3.45			6.00		
8.45	2.632*		7.50		
.30			2.40		
3.15	.5#		.85		
6.00	1.02#		1.25		
3.60	4.65		2.40		
1.15	2.30		2.385*		
.45	6.75		1.04#		
1.15	.85		6.00		
.45	7.65		7.60		
4.79	3.40		3.45		
7.60			6.50		
4.6	2.560*		1.35		
58.10*					
1.03#					
9.35					
3#					
7.75					
1.1#					
3.70					
1.05					
.95					
1.60					
5.55					
20.10*					

CHARGE SALES RECAP.					
DEPT	100	101	102	103	104
1	23.51				23.51
2	55.10				55.10
3	8.10				8.10
4	24.35	24.32			48.67
5		25.60	20.10		45.70
6					
7	23.80		23.85	46.05	93.70
8					
9					
10					
TOTAL	51.31	87.75	51.92	46.05	237.03
	56.18	81.87	18.71	41.21	
	87.49	169.62	70.63	85.16	46.05

Recapitulating Sales by Clerks

IN order to determine the amount of sales made by each clerk in a retail store it is necessary to recapitulate the sales by clerks. This recapitulation is made up from the sales tickets sent in by each clerk.

The cash sales are first added and listed as follows:

A clear signal is first printed to show that there is nothing in the machine. The clerk's number and department number are printed at the top of the column, with the Non-add key depressed. The items for clerk number one are then listed and a total taken. The cash sales of the rest of the clerks are then handled in order. The charge sales are handled in the same way. The totals are then entered in a space

at the bottom of the sheet and grand totals of clerks and departments extended. A sales recapitulation made out (including all pen entries and sorting sales checks) by a \$6-a-week girl and a Burroughs in a half hour, requires two hours when done by hand. That means a daily saving of 18¾ cents and a yearly saving of \$56.25 on this kind of work alone, figuring the salary at only \$6 per week.

NOTE—This sheet is reduced in size to enable printing on this page. The adding machine figures shown are therefore smaller than the actual figures printed by the Burroughs.

PETTY CASH SUMMARY ENVELOPE 3/25/15						
Cartage	Postage	Office Exp	Freight	Express	Misc	Summary
1.34	6.5		2.00	1.40	1.25	21.21
3.20			1.50	.35	9.00	16.65
			2.00	.10	.45	27.05
			.25	.75	1.60	18.10
			.45	.45	7.00	7.60
			.75	.90	.15	25.83
			.65	1.00	1.25	
			.00	.40	.40	116.44 *
			.35	.25	3.00	
			.00	2.00	.18	
			.00		1.55	
			3.25	7.60 *		
					25.83 *	
			27.05 *	18.10 *		

Acct. No. 40	Acct. No. 62	Acct. No. 70	Acct. No. 84	Acct. No. 115	Acct. No. 126
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Approved by *J. A. Moore* Secretary

Petty Cash Account Folio 46

Handling Petty Cash

THE handling of small expenditures, such as for stamps, car fare, messenger, drayage, etc., occasions much bother and involves considerable book-keeping unless properly handled.

The Burroughs Petty Cash System is being adopted by hundreds of business houses.

The plan is to draw a check for "Cash" for an amount sufficient to cover the probable expense for a week. This is charged on the books to the individual handling the petty cash and credited to "Cash."

The money is placed in a drawer, from which are paid all items that it is desired to handle in this manner. A memorandum (see Petty Cash voucher) is made out for each item as it is paid and is placed in an envelope prepared for this purpose.

At the end of the week, all memorandums are removed from the envelope and assorted under the headings to which the items are to be charged. The envelope is then inserted in the carriage of the Burroughs, and the different items are listed under the proper headings. The totals in the various columns will show the amounts paid out and chargeable to the

various accounts, while the grand total, added to the cash still in the drawer, should balance with the original amount of the fund.

A new check is then drawn to "Cash" for an amount equal to the total of all the vouchers which replenishes the fund to its original amount. The amount of the check is charged to the various expense accounts as indicated by the distribution on the Petty Cash Envelope, and credited to "Cash."

Inventories

IN the compilation of stock records and the taking of inventories, the time and labor-saving possibilities of the Burroughs, both in adding and extending values, are of great assistance.

The work and inconvenience are cut in half; the machine multiplies and proves the extensions, lists and adds in one operation, the stock numbers, quantities, and amounts, and makes it possible to secure separate divisions of various classes of merchandise, and to get totals of each and a grand total of all.

Burroughs Bookkeeping Machines for Making Customers' Statements

MANY banks and commercial houses are making monthly statements to their customers on Burroughs Machines. For this work there is a specially equipped machine with three columns at the left for printing months and days of the month. This does not interfere with the use of the machine for regular work.

All firms desire that monthly statements be sent out as early in the month as possible, as a day gained on this work means more prompt collections and additional time to devote to other important work demanding attention at the same time in the month.

wheels will then show the same amount as the total debits, and thus prove each statement. If this method is used the machine must be cleared after each statement is finished. This may be done by printing the total on the back of the statement, making it easy to compare with the total debits. This proves the ledger footings and so prevents many trial balance troubles.

The Burroughs not only saves a great deal of time and money but insures neat, accurate, business-like statements. It enables you to get your statements out on the first of the month, after which the machine can be used for other figurework.

Work Speeded Up

THE Injector and Ejector is a small lever conveniently placed on the right end of the carriage. Its purpose is to bring a blank statement into printing position quickly, and after the statement is finished, to eject it from the carriage without the loss of time occasioned by twirling the platen with the hand.

After the sheet has been dropped into the carriage a forward stroke of the handle whirls the platen and feeds the paper into the machine. It is done so quickly that the eye cannot follow; the action of the device is so accurate that every sheet will be fed into the machine the same predetermined distance.

The stroke of the handle may be regulated by shortening or lengthening the distance between the stops. If the sheet is injected too far with a full throw, hold the handle forward, release the back stop, by pressing down on the knurled knob lever, and move the stop forward.

The handle automatically returns to a backward position after



Figure 56

This shows the Burroughs Visible Statement Machine with Injector and Ejector Device for quickly inserting and removing statements

each forward stroke. When it is entirely back and also when it makes the return stroke, the pawl is disengaged from the teeth of the gear; thus free action of the platen is in no way interfered with, if it is desired to twirl it either backward or forward by hand.

A sheet is ejected from the carriage in the same quick manner, by a second forward stroke of the handle.

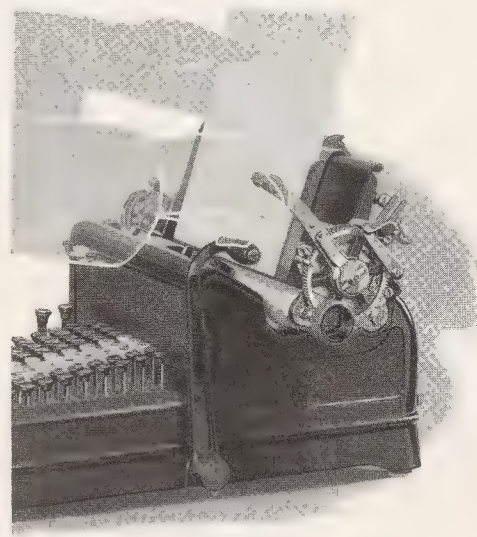


Figure 57—The Injector and Ejector

This Device practically eliminates the time required to place a sheet in the machine or take it out

MONTHLY STATEMENT			
Erie, Pa. _____ 191____			
TO ORR G. METZNER, DR.			
13 WEST 7th STREET			
This account is now due. Kindly send check			
DR		*	
AUG BL	24.50		
SEP	6.75		
	20.00		
	21.50		
	22.15		
	30.00		
	2.50		
		74.32	*
CR			
SEP 6	10.00		
20	25.00		
25	30.00		
		65.00	*
	BL	9.32	

Figure 55

Statement made on Burroughs Visible Statement Machine

In making up this statement (Figure 55) on the Burroughs the items are taken direct from the ledger. The debits are listed, the carriage shifted to the next position and the total printed at the right.

The credits, if any, are next listed and a sub-total printed under the total debits.

The balance as taken from the ledger is set into the machine and printed as an item. The adding

Machine-made Deposit Slips

THE Burroughs will save time and eliminate all possibility of errors in making out Bank Deposit Slips. An excellent example of how the Burroughs will handle the work is shown in Figure 58.

When the deposit slip is made a carbon copy—an *exact duplicate*—is also prepared. This duplicate is filed but can, when desired, be pasted on the back of the check book stub. Where it is desired to get a deposit to the bank at an early hour and to know that the duplicate is an exact copy of the items that have gone to the bank there is no medium that will lend such valuable assistance as the Burroughs.

The accuracy insurance of making Bank Deposit Slips on a Burroughs is reason enough why this plan should be used, even if it were not that the work can be done many times faster than by the pen and brain method.

Deposited by	
The Saginaw Milling Company	
in the	
Second National Bank	
Saginaw, Mich., APR 21 1913 19	
Bank Notes	154.00
Gold	50.00
Silver	23.45
Checks	23.40
	245.30
	54.60
	60.00
	525.00
	545.00*

Figure 58
Bank deposit slip made in duplicate on a Burroughs

Paid Checks	Deposits
45.40	Bal. 2,343.35
335.56	453.30
66.54	345.50
256.70	150.75
500.00	540.25
135.45	330.67
76.76	245.56
50.00	377.98
100.00	754.30
433.35	178.80
5.00	344.40
23.45	
10.37	6,064.86 s
356.50	
2,395.08*	2,395.08*
Bank Balance	3,669.78*
Checks Outstanding	
Number	Amount
33.45	56.50
33.46	325.00
33.48	43.35
33.50	67.66
33.56	125.25
33.60	4.50
	622.26*
Bank Balance	3,669.78
Checks Outstand	622.26*
True Balance	3,047.52*

Figure 59
Bank balance proven with unpaid checks

Proving the Bank Balance

WHEN the bank's monthly statement or pass book is returned with the cancelled checks the balance should be tested. First, list and add on the Burroughs the checks returned by the bank. Next, list the balance shown by the bank on its last statement or when the book was previously balanced, and to this balance add all deposits made since. From this total subtract on the machine the total of the checks returned. This will give the present balance as shown by the bank.

Now list by number and amount all checks drawn but not yet returned. These can easily be found by checking the returned checks against stubs of the check book. The total of these checks subtracted from the balance shown by the bank, will give your true balance as shown in check book.

Close-Up Position of the Keyboard and Paper Carriage An Advantage

ON the Burroughs Low Keyboard Visible the paper carriage is but *three inches* back of the keyboard. This close-up construction is especially advantageous from the standpoint of convenience in operation. Not only is the necessity of "reaching" in making carriage adjustments overcome, but the printed work is brought within the operator's easy vision.

The adding wheels, keyboard and printing position all are an equal distance from the eyes of the operator, which affords protection from eye fatigue. When an item has been listed the printed figures can be easily seen without having to lean forward.

These are points that will possess importance to you in proportion to the amount of experience you have had with visible types of figuring machines, or the amount of thought you have given to the subject.

But even if you have had no personal experience with figuring machines you will see the logic of bringing the keyboard and paper carriage in close relation to each other, as we have succeeded in doing in the Low Keyboard

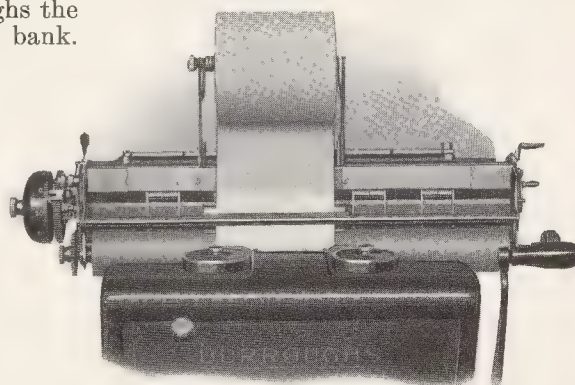


Figure 60
An item listed on the Burroughs Visible can be seen immediately just as shown here

Burroughs. For this facilitates the operation of the machine, which means satisfied and willing operators and more work accomplished in a given time.

How to Get More Use from Your Burroughs

YOU probably bought the Burroughs with the idea of using it for certain definite work—mostly straight adding and listing. As you become familiar with it, however, you will find many ways to use it which never occurred to you before.

Listed on this page are some of the things which are being handled on Burroughs Machines to save time on detail work. Of course, you may not have all of these uses for your Burroughs.

They are merely listed as suggestions, to show the widespread adaptability of this machine. Some of the most progressive business men have adapted the Burroughs to these uses.

If you want to know how to apply the Burroughs to any of these things, or to any other phases of your work, just write the details to the nearest of the 189 offices the Burroughs Adding Machine Company maintain in the United States and Canada. Your telephone book or your bank will supply the address.

The information is yours for the asking.

Daily Uses

- 1—Proving Daily Postings.
- 2—Daily Ledger Balance.
- 3—Daily Cash Balance.
- 4—Preparing Deposit Slip in Duplicate.
- 5—Daily Recap. of Sales—Cash, Credit, C. O. D., Etc.
- 6—Checking Invoices and Freight Bills.
- 7—Figuring Discounts.
- 8—Computing Commissions.
- 9—Summary of Day's Receipts and Disbursements.
- 10—Figuring Estimates.
- 11—Ledger Posting.
- 12—Listing and adding yardage, feet, or weight of goods packed, received or shipped.
- 13—Listing and adding hours and minutes, tons and cwt., feet, inches and fractions of inches, and other compound numbers.
- 14—Posting Perpetual Inventory Records.

Weekly Uses

- 15—Preparing Weekly Pay Roll.
- 16—Making Out Pay Envelopes.
- 17—Preparing Weekly Summaries of Labor Distributions.
- 18—Making Weekly Summaries of Sales by Departments, by Salesmen, by Territories, by Ledgers, by Commodities, or by any desired division.
- 19—Analysis of Accounts Receivable.
- 20—Analysis of Accounts Payable.
- 21—Handling Petty Cash Expenditures.
- 22—Compiling Change Sheet for Pay Roll.
- 23—Comparative Statements of Operating Expenses and Earnings.
- 24—Proving Travelers' Expense Reports.

Monthly Uses

- 25—Taking off Trial Balance Figures, Debits and Credits.
- 26—Footling Ledger Accounts preparatory to taking off Trial Balance.
- 27—Reconciling Cash Book Balance with Bank Balance, listing number and amount of each outstanding check.
- 28—Making Monthly Statements, giving months, date, total of debits, total of credits. Balance and special terms or characters if required.
- 29—Monthly Summaries of Merchandise Sales and Profits.
- 30—Recapitulation of Accounts Receivable and Payable for Controlling Accounts.
- 31—Analysis of Accounts Receivable and Payable.
- 32—Compiling Statement of Production Cost.
- 33—Compiling Statements of Material and Supplies used.

Annual Uses

- 34—Footling Inventories, Calculating Extensions.
- 35—Compiling Statement of Profit and Loss for year.
- 36—Preparing of Balance Sheet.
- 37—Making Comparative and General Statistical Statements to show progress made by business.

BURROUGHS ADDING MACHINE COMPANY, DETROIT, MICHIGAN, U.S.A.

Decimal Equivalents for Fractional Parts of a Gross Ton
This table gives the decimal multiplier for each fraction of a gross ton (2240 lbs.) from 1/16 to 15/16. It is to be used in connection with the Burroughs Adding Machine.

Board Feet per Running Foot in Lumber of Different Dimensions
This table gives the board feet per running foot for lumber up to 12 inches wide by 24 inches thick. It is to be used in connection with the Burroughs Adding Machine.

Table of Chain Discounts
To be used in connection with Burroughs Adding and Calculating Machines. This table gives the decimal multiplier for each series of chain discounts from 1% to 99%.

Table of Decimal Equivalents for Fractional Parts of a Bushel
To be used in connection with Burroughs Adding and Calculating Machines. This table gives the decimal multiplier for each fraction of a bushel from 1/16 to 15/16.

Reciprocals of Numbers from 1 to 2000
This table gives the reciprocal of each number from 1 to 2000. It is to be used in connection with the Burroughs Adding Machine.

Months and Days Expressed in Decimal Equivalents of a Year
This table gives the decimal equivalent for each month and day of the year. It is to be used in connection with the Burroughs Adding Machine.

Interest Table
To be used in connection with Burroughs Adding and Calculating Machines. This table gives the decimal multiplier for each rate of interest from 1% to 12%.

Table for Figuring Lumber, Steel Beams, Angles, Etc.
This table gives the decimal multiplier for each size of lumber, steel beam, angle, etc. It is to be used in connection with the Burroughs Adding Machine.

Grain Tables for Figuring the Value of Barley, Potatoes, Hay, Wheat, Oats, Corn, Rye and Flax.
This table gives the decimal multiplier for each quantity of grain. It is to be used in connection with the Burroughs Adding Machine.

Any of These Tables Will be Sent Free On Request

THE tables shown above have been compiled as a service to business men. Where they apply they can be used advantageously as they show practical short-cuts in handling different kinds of calculations. Not all business men will want all of these tables but each should have the ones that can be applied to his particular line of business. Write and tell us the kind of work you have to do.

Table for Lumber Dealers.

Gives the board feet per running foot for lumber up to 12 inches thick by 24 inches wide.

Burroughs System of Computing Interest.

A table of constants for computing interest at rates from 1% to 12 3/8%.

Table for Chain Discounts.

Gives the decimal multiplier of any probable discount or series of discounts.

Months and Days Expressed in Decimal Equivalents of a Year.

For figuring interest, insurance premiums, etc.

Decimal Equivalents of Common Fractions.

Useful in all calculating work in which fractions are used.

Decimal Equivalents for Fractional Parts of a Gross

For figuring articles on a gross basis that are expressed by number of pieces, by the dozens, or fractional parts of a dozen.

Decimal Equivalents for Fractional Parts of a Gross Ton.

For converting pounds into gross tons and decimal fractions thereof.

Decimals of a Foot for Inches and Eighths of Inches

Table for figuring lumber, steel beams, angles, etc.

Reciprocals of Numbers from 1 to 2000.

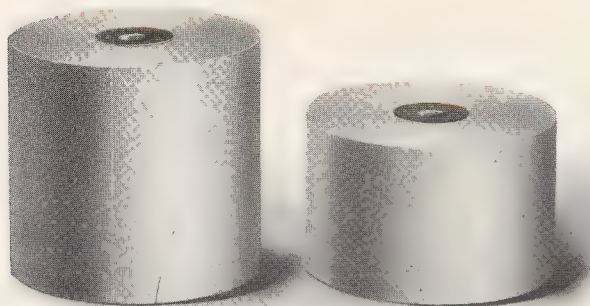
A convenient table for performing division, determining ratios or percentages, etc.

Reciprocals of Numbers in Common Use

Reciprocals of an acre based on square feet, a day based on minutes, etc.

Grain Tables for Figuring the Value of Barley, Potatoes, Hay, Wheat, Oats, Corn, Rye and Flax.

A series of tables for calculating the price of a given number of pounds at a given price per bushel or per ton.



Broad Figure 61—Burroughs Paper Narrow

Burroughs Paper Helps to Make Work Neat and Readable

GOOD paper is required in order to get the best results from the operation of an adding machine. It must be of such strength that it will not tear under the tension required for feeding in the carriage; it must have a surface that will take a clear impression

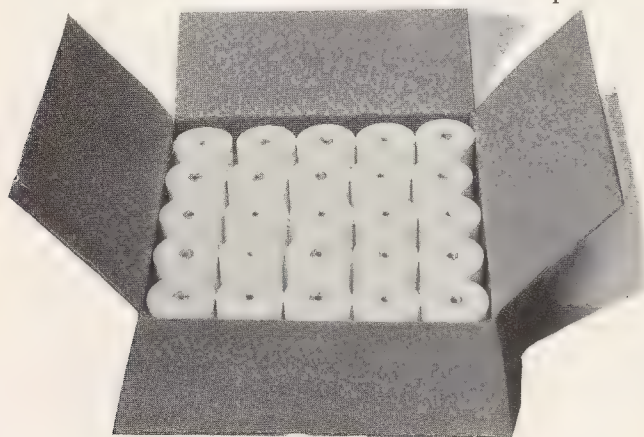


Figure 62
Burroughs paper is packed in boxes containing 12, 25, 50 or 100 rolls

and give carbon copies; and above all it must be free from "paper lint." This latter is most important. After each operation the paper is torn off, and ordinary paper will deposit minute particles, or lint, which fly into the mechanism and ultimately cause mechanical trouble.

After considerable difficulty we have obtained a paper which is made at one of the largest mills to our special order, and which we recommend as being practically free from any such defects.

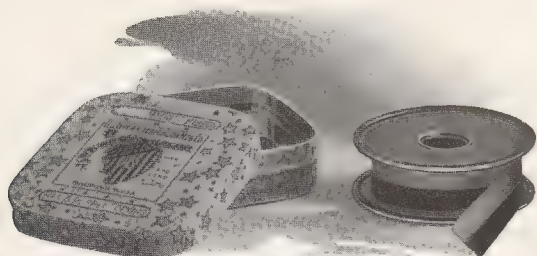


Figure 63—Burroughs Ribbons
Burroughs ribbons retain the ink and give a clear impression

Burroughs paper is regularly furnished in two sizes: Narrow paper, which is $2\frac{1}{8}$ inches wide, and broad paper, which is $3\frac{1}{2}$ inches wide.

Burroughs Ribbons are Made for Burroughs Machines

THOUGH the item of ribbon expense is small, it is none the less important to get the best service in this particular.

Burroughs ribbons are made of woven fabrics, especially designed to retain the ink, give a clear impression and prevent ravelings, which are liable to get into the mechanism when inferior ribbons are used. Every Burroughs ribbon is packed in a metal box, wound on a metal spool and wrapped in tinfoil.

For the convenience of our users, we issue Coupon Ribbon Books at reduced rates, containing forty coupons, each carrying a value of twenty-five cents if applied on the purchase of a new ribbon; redeemable at any of our Service Stations.

To Put on New Ribbon

THE ribbon is quickly changed, for the ribbon spools are on the outside of the case. Remove the dust caps by loosening the thumb screws. In replacing the spools with the new ribbon, see that it feeds from the top of the spool (Fig. 64), and that it is squarely under the guide rolls. Should the spools fail to settle clear down, turn them around slowly until they engage with the small pins. They will then drop into position.

The Burroughs Visible Machine is sometimes equipped with the bi-chrome or two-color ribbon. In any event, each special function is designated by a separate symbol; such as the asterisk (*) for the Total, (S) for the Sub-total, and the number sign (#) for the Non-add items. If the single color ribbon is used, to renew the ribbon when the printing is faint, it is only necessary to turn it over by changing the left spool to the right side. In this way almost double service can be obtained from each ribbon.

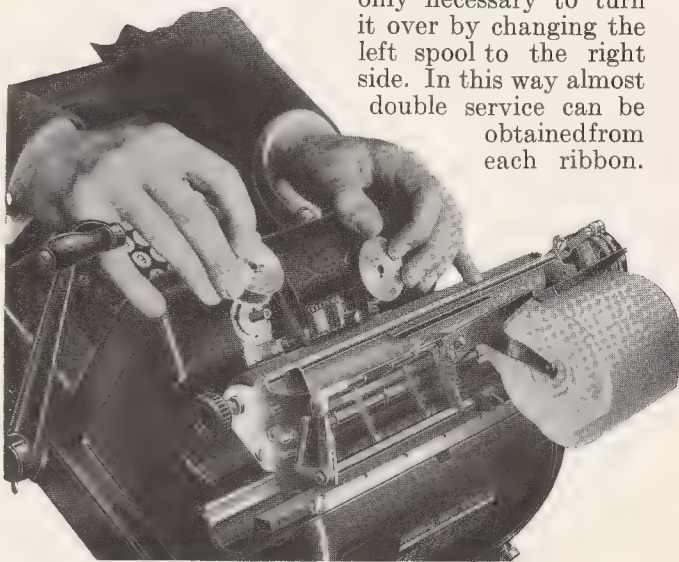


Figure 64—Changing the Ribbon
Changing the ribbon is almost as easy as pulling the handle



Books That Business Men Should Have

EVERY manufacturer should get the good that is contained in "Efficient Cost Keeping." The retail merchant should read "A Better Day's Profits" from cover to cover. For, while the former book shows the way to better business in the manufacturing field, the latter book takes up the same question from the standpoint of the retail merchant. Either or both of these books are free for the asking to business men who believe in making the biggest profit from every dollar invested.

ONE of the big commercial agencies that compile statistics of business disaster groups all retail failures under eleven causes. - - - - - Probably every one of these reasons could be sifted down into a single one if all the facts were known, and that one universal and eternal reason for failure labeled "Guesswork."

*James H. Collins.
In Saturday Evening Post*

The Service Department

THE policy of the Burroughs Company has never been simply to sell Figuring Machines; they have always concerned themselves in knowing that every machine sold gives continuous service for a business lifetime.

To assure this to the greatest extent possible a chain of Service Stations has been established throughout the country, in charge of factory graduates whose sole duty is to keep Burroughs Machines in perfect working order. These men are trained experts who know Burroughs Figuring and Listing Machines as no local mechanic possibly could, and whose experience

"TO do every reasonable thing that will make every Burroughs user a booster—that is the end and motive of Burroughs service."

In Case of Accident

SHOULD your machine happen to get out of order, through an accident or other cause, please write, wire or telephone our nearest branch office, the address of which is given on pages 30-31. Do not attempt to take the machine apart nor permit an inexperienced mechanic to tinker with it. It is probable that the trouble can be remedied very quickly. In case of a



*Figure 65
Service Department reviewing
daily reports of inspectors.*

has taught them how to make any adjustments.

During the guaranty period—one year from the date of delivery—our service inspector gives your machine the necessary attention. Afterwards, for a small charge, he will clean and oil the machine, or the owner can do it for himself.

severe accident our inspector will send you a substitute machine to use while yours is being repaired.

IF a man needs a thing in his business, it is likely to cost more not to supply the need than the thing itself would cost.

Burroughs Offices in the United States and Canada

Akron, Ohio	33-35 North Main Street	Galveston, Texas	209 22nd St.
Albany, N. Y.	Spencer Trask Bldg., 74 Chapel St.	Grand Forks, N. D.	Clifford Bldg., 4th and Demers
Albuquerque, N. M.	Commercial Club Bldg., Fourth and Gold Av.	Grand Rapids, Mich.	Murray Bldg., 42 Division Ave., N.
Allentown, Pa.	Commonwealth Building, 510 Hamilton	Great Falls, Mont.	Park Hotel Bldg., 108 Central Ave.
Amarillo, Texas	Mission Bldg., 311 Polk Street	Green Bay, Wis.	Clinton Annex, 113 E. Walnut St.
Atlanta, Ga.	61 North Pryor Street	Greenville, S. C.	Masonic Temple Bldg., 306 S. Main St.
Augusta, Ga.	852 Broad Street		
Austin, Texas	Elks Bldg., 620 Colorado St.	Halifax, N. S.	Box 661, Ray Bldg., 435 Barrington St.
Bakersfield, Calif.	2020 I St.	Hamilton, Ont.	Sun Life Bldg., Main and James Sts.
Baltimore, Md.	Lexington Bldg., Lexington and Liberty	Harrisburg, Pa.	Tel. Bldg., Locust and Court Sts.
Beaumont, Tex.	Temperance, Bldg.	Hartford, Conn.	Judd & Root Bldg., 179 Allyn St.
Beverly, Mass.	Mason Bldg., 244 Cabot St.	Houston, Texas	Kress Bldg., 201 Main St.
Billings, Mont.	Masonic Temple, 222 North Broadway		
Binghamton, N. Y.	Press Building, 21 Chenango St.	Indianapolis, Ind.	204 State Life Bldg.
Birmingham, Ala.	Jefferson County Bldg., 2nd Ave. and 21st St.	Jackson, Mich.	Central National Bank Bldg., Cor. Francis and Liberty Sts.
Bismarck, N. Dak.	206 Fourth St.	Jackson, Miss.	147 East Capitol St.
Boise, Idaho	P. O. Box 589, 908 Bannock Street	Jacksonville, Fla.	Dyal-Upchurch Bldg., Bay and Main
Bridgeport, Conn.	Lincoln Bldg., 62 Cannon St.	Jamestown, N. Y.	Wellman Bldg., 101 W. 3rd St.
Boston, Mass.	Federal Bldg., 136 Federal St.	Johnstown, Pa.	First National Bank Bldg.
Brooklyn, N. Y.	Lawyers Title & Trust Co., 188 Montague St.	Joplin, Mo.	122 E. Fourth St.
Buffalo, N. Y.	Electric Building, 39 East Genesee St.	Juneau, Alaska	Valentine Bldg., 115 Seward St.
Burlington, Vt.	The Burlington, 121 St. Paul		
Butte, Mont.	Bee Hive Block, 48 East Broadway	Kalamazoo, Mich.	136 Burdick Arcade, Main and Burdick Sts.
Calgary, Alberta	P. O. Box 1933, 12-13 Cadogan Block, No. 716 Second St.	Kansas City, Mo.	O'Rear-Leslie Bldg., 1012 Baltimore Ave.
Camden, N. J.	Temple Building, 415 Market Street	Knoxville, Tenn.	Holston Nat'l Bk. Bldg., 529 S. Bay St.
Cedar Rapids, Iowa	P. O. Box 267, Jim Block, 127 N. Third St.		
Charleston, S. C.	21 Broad Street	Lafayette, Ind.	Lafayette Loan & Trust Bldg., 133 Fourth St.
Charleston, W. Va.	17 Hale St.	Lansing, Mich.	City National Bank Bldg., Washington and Michigan Aves.
Charlotte, N. C.	Commercial National Bank Bldg.	Lexington, Ky.	First & City National Bank Bldg., Main and Cheapside
Chattanooga, Tenn.	James Bldg., 8th and Broadway		
Chicago, Ill.	Marquette Bldg., 140 S. Dearborn St.	Lima, Ohio	Bus. College Bldg., 210 N. Elizabeth St.
Cincinnati, Ohio	Gwynne Building, Cor. 6th and Main Sts.	Lincoln, Neb.	Bankers Life Bldg.
		Little Rock, Ark.	Sou. Trust Bldg., 2nd and Louisiana
Cleveland, Ohio	Rockefeller Bldg., W. 6th and Superior Sts.	Los Angeles, Cal.	310 South Hill St.
Columbia, S. C.	1224 Washington Street	Louisville, Ky.	323 Guthrie St.
Columbus, Ohio	Stoneman Bldg., 81 North Third St.	Lynchburg, Va.	Burroughs Bldg., 1113-15 Church St.
Corpus Christi, Tex.	P. O. Box 836		
Dallas, Texas	1805 Elm St.	Macon, Ga.	562 Mulberry St.
Danville, Ill.	Adams Building, 139 N. Vermilion St.	Madison, Wis.	Washington Bldg., 119 W. Wash. Ave.
Davenport, Iowa	Security Bldg., 115 West Third Street	Manchester, N. H.	Kennard Bldg., 1008 Elm St.
Dayton, Ohio	Bimm Homestead Bldg., First and Main Sts.	Marquette, Mich.	1st National Bank Bldg., Front and Spring Sts.
Denver, Colo.	429 Seventeenth Street		
Des Moines, Iowa	Hippee Bldg., 6th and Mulberry	Memphis, Tenn.	Exchange Bldg., Madison and Second
Detroit, Mich.	David Whitney Building, Woodward and Grand Circus Park	Milwaukee, Wis.	First Nat'l Bank Bldg., 431 E. Water St.
Dubuque, Iowa	Security Building, 850 Main Street	Miami, Fla.	Tatum Bldg., 1207 Avenue C
Duluth, Minn.	316 West First Street	Minneapolis, Minn.	McKnight Bldg., 2nd Ave. S. and 5th St.
		Mobile, Ala.	Van Antwerp Bldg., Royal and Dauphin Sts.
Eastern Missouri	Federal Reserve Bank Bldg., Broadway and Pine, St. Louis, Mo.	Montgomery, Ala.	First Nat'l Bank Bldg., Commerce St. and Court Square.
Elmira, N. Y.	P. O. Box 47, Merchants Nat. Bank Bldg., 109 West Water St.	Montreal, Que.	392 St. James St.
El Paso, Texas	Mills Bldg., 201-202 Mills Street	Muncie, Ind.	465 Johnson Bldg.
Erie, Pa.	Commerce Building	Muskogee, Okla.	Box 1477, Hester Bldg., 431 West Okmulgee
Eugene, Ore.	88 8th Ave., W.		
Evansville, Ind.	Woods Building, Cor. 4th and Main St.	Nashville, Tenn.	Stahlman Bldg., 234 3rd Ave., North
Fall River, Mass.	Massasoit-Pocasset National Bank Bldg., 29 Bedford St.	Newark, N. J.	Essex Bldg., 31 Clinton St.
Fargo, N. D.	Magill Building, 1 Broadway	New Haven, Conn.	Cutler Bldg., 113 Church St.
Flint, Mich.	327 Beach Street	New Orleans, La.	Whitney Bldg., St. Charles and Gravier
Fort Scott, Kan.	16 South Eddy Street	New York, N. Y.	Astor House Bldg., 217 Broadway
Fort Smith, Ark.	Kennedy Building, S. 6th Street	Norfolk, Va.	Law Bldg., 118 West Plume St.
Fort Wayne, Ind.	Utility Building, 102 E. Wayne Street		
Fort Worth, Texas	Grain & Cotton Exchange Building 214 West Seventh Street	Oakland, Calif.	414 Thirteenth St.
Fresno, Calif.	Box 858, 2317 Fresno Street	Oklahoma City, Okla.	Grain Exchange Bldg., Grand and Harvey Sts.
		Omaha, Neb.	World-Herald Bldg., 15th and Farnam Sts.
		Ottawa, Ont.	139½ Sparks St.

Paducah, Ky	The Shamrock, 608 Broadway	South Bend, Ind	J. M. S. Bldg., Main and Washington
Parkersburg, W. Va	Union Trust Bldg., Market and 7th Sts.	Southern Illinois	Federal Reserve Bank Bldg., Broadway and Pine, St. Louis, Mo.
Pensacola, Fla	Thiesen Bldg., 40 S. Palafox St.	Spokane, Wash	Victor Block, 705 Sprague Ave.
Peoria, Ill	Lehmann Bldg., Main and Jefferson	Springfield, Ill	Hickox Bldg., 530 E. Capitol Ave.
Philadelphia, Pa	912 Chestnut St.	Springfield, Mass	Myrick Bldg., 29 Worthington St.
Phoenix, Ariz	Del Ray Hotel Bldg., 205 North Central Ave.	Springfield, Mo	McDaniel Bldg., 218 McDaniel Ave.
Pittsburgh, Pa	Jenkins Arcade Bldg., 5th and Liberty Ave.	Springfield, O	Fairbanks Bldg., Main and Fountain
Port Huron, Mich	First Nat'l Bank Bldg., Huron Ave.	Stockton, Calif	511 E. Channel St.
Portland, Maine	Fidelity Bldg., 465 Congress St.	Syracuse, N. Y	McCarthy Bldg., 487 S. Salina St.
Portland, Oregon	Oregon Bldg., 5th and Oak	Tacoma, Wash	Tacoma Bldg., 11th and A Sts.
Poughkeepsie, N. Y	Taylor Bldg., 35 Market St.	Tampa, Fla	Hillsboro Hotel Annex Bldg., 312 Madison St.
Providence, R. I.	Studley Bldg., 86 Weybosset St.	Terre Haute, Ind	Grand Opera House Block, 29 N. 7th St.
Pueblo, Colo	120 West Fifth St.	Texarkana, Texas	120 W. Broad St.
Quincy, Ill	Illinois State Bank Bldg., 6th and Hampshire	Toledo, Ohio	Spitzer Arcade, Madison Ave.
Raleigh, N. C	Commercial National Bank Bldg., Martin and Wilmington	Topeka, Kan	110 West Sixth Ave.
Reading, Pa	Berks County Trust Bldg., 35 N. 6th St.	Toronto, Ont	Hees Bldg., 52 Bay St.
Regina, Sask	Canada Life Bldg., Cornwall and 11th Ave.	Traverse City, Mich	State Bank Bldg., Cor. Front and Union Sts.
Reno, Nev	Odd Fellows Bldg., Center and Second	Tulsa, Okla	314 E. 2nd St.
Richmond, Va	119 North Eighth St.	Utica, N. Y	Utica City Nat'l Bank Bldg., 110 Genesee St.
Rochester, N. Y	Sumner-Hayward Bldg., 154 East Ave.	Vancouver, B. C	Dominion Trust Bldg., 402 W. Pender St.
Rockford, Ill	Stewart Office Bldg., S. Main St.	Victoria, B. C	Stobart & Pease Bldg., 745 Yates St.
Sacramento, Calif	405 J St.	Waco, Texas	Amicable Bldg., 5th and Austin
Saginaw, Mich	Weichmann Bldg., Genesee and Jefferson	Walla Walla, Wash	27 West Main St.
St. John, N. B	P. O. Box 23, Armstrong and Bruce Bldg., 171 Prince William St.	Washington, D. C	Equitable Bldg., 816 Fourteenth St., N. W.
St. Joseph, Mo	719 Francis St.	Wausau, Wis	Livingston Bldg., 3rd and Washington Sts.
St. Louis, North	Federal Reserve Bank Bldg., Broadway and Pine, St. Louis, Mo.	Waterbury, Conn	324 Lilly Bldg.
St. Louis, South	Federal Reserve Bank Bldg., Broadway and Pine, St. Louis, Mo.	Waterloo, Iowa	First Nat'l Bank Bldg., 4th and Sycamore Sts.
St. Paul, Minn	Endicott Arcade, 144 E. Fifth St.	Watertown, N. Y	Power & Light Bldg., Public Square
Salt Lake City, Utah	Walker Bank Bldg., 171 Main St.	Wheeling, W. Va	Schmulbach Bldg., 1134 Market St.
San Antonio, Texas	State Bank & Trust Bldg., 313 E. Houston St.	Wichita, Kan	Sedgwick Bldg., 124 E. First St.
San Diego, Calif	Central Mortgage Bldg., 1021 First St.	Wilkes-Barre, Pa	Miners Bldg., Market and Franklin Sts
San Francisco, Calif	Bankers Investment Bldg., 742 Market St.	Williamsport, Pa	First Nat'l Bank Bldg., 25 W. 3rd St.
San Jose, Calif	St. James Hotel Bldg., 127 N. First St.	Wilmington, Del	DuPont Bldg., 10th and Market St.
Savannah, Ga	National Bldg., Bull and Broughton	Wilmington, N. C	814 Murchison Bldg.
Scranton, Pa	Traders Nat'l Bank Bldg., Wyoming Ave.	Windsor, Ont	10 Chatham St., East
Seattle, Wash	Henry Bldg., 4th Ave.	Winnipeg, Man	Columbus Hall Bldg., 290-4 Graham Ave.
Shreveport, La	First National Bank Bldg., Market and Milam Sts.	Worcester, Mass	Slater Bldg., 390 Main St.
Sioux City, Iowa	Davidson Bldg., 606 Pierce St.	Youngstown, Ohio	Federal Bldg., Phelps and Federal Sts.
Sioux Falls, S. D	Union Savings Ass'n Bldg., 127 S. Main Ave.		

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One User's Philosophy

“**W**HEN I buy for service I would rather know the firm which makes the machine than to listen to wearisome talks about superior materials and brilliant engineering skill.

“I don't know much about those qualities of different metals which make them the best for different purposes—nor do I know anything of the technical laws of mechanical engineering—but I do know human nature.

“I know that a concern with the right ideas of service to its customers—the concern that has succeeded—has done so because its product has made good with the people who bought it.

“I'll bet on that concern—and I feel comfortable when I have bought its product.

“It is not good business for me to trade anywhere else. I cannot afford to do so.”

Instructions

*For Operating
and Using
Burroughs
Visible
Adding and
Listing
Machines*

